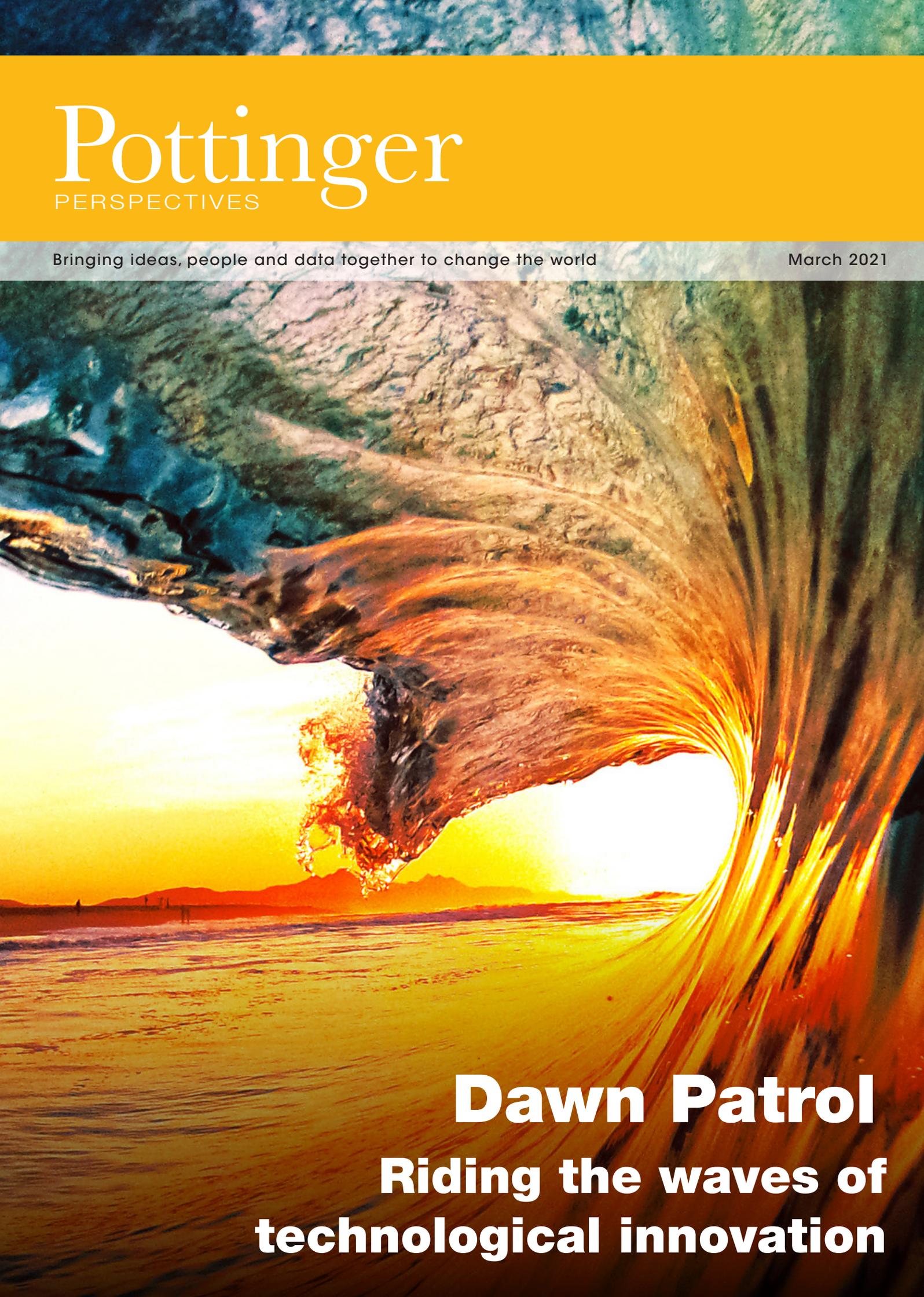


Pottinger

PERSPECTIVES

Bringing ideas, people and data together to change the world

March 2021



Dawn Patrol
Riding the waves of
technological innovation



The pace of change is accelerating. This isn't just a phrase we're hearing a hundred times a year, it's something we're seeing at work, at home, and on the journey in between. There's no doubt that some of these developments have been accelerated by COVID-19, but the forces driving them have been at work for a long time.



Netflix can trace its origins to the birth of film

Like an ocean wave formed far out to sea, the momentum starts building long before the technological ocean breaker crashes down on the shore. Apple's cellphone, launched in 2007, was the culmination of many decades of evolution in screen, processor and battery technologies. Some of the first passenger cars were electric, but it took a century for battery technology to make electric vehicles a practical and commercial reality. Netflix can trace its origins to the birth of film, but its wave only crested when internet download speeds made streaming video a reality.

In most cases, consumers love innovation. Who wouldn't prefer more choice, better functionality, greater convenience and lower prices? Streaming services offer a host of content, accessible when and where you want, and often presented in a variety of languages. For the price of a couple of old-style video rentals, you can fill your screen non-stop for a month. Thus, in many industries, innovation has been a powerful enabler of commercial success.

If you understand the technological enablers and barriers involved, you will know that many of these revolutionary innovations have resulted from long-term evolutionary change. And, when you see this, their timing becomes more predictable. In the early 1990s, scientists at HP anticipated the arrival of smartphones in the first decade of the 21st century, though no-one acted. In the early 2000s, Nokia actually developed a new cellphone that looked a lot like the future iPhone (bar the Nokia logo, of course), but management did not believe that customers would like it. The iPhone's success reflected the marriage of handset technology with 3G bandwidth, though its speed of market penetration must be credited, at least in part, to Steve Jobs' powerful vision as to how the new technology could be used to bring new functionality to people's lives.

Just as the modern smartphone revolutionised mobile communications, there are other technological waves that are beginning to break. They will create



Rank	Name	2020 units Share	Commitment to electric vehicles
1	Volkswagen	9.3 million 12.1%	70 models and a total of 22 million EVs by 2030
2	Toyota	7.2 million 9.4%	70% of all vehicle sales expected to be electric by 2030
3	Renault Nissan	6.8 million 8.9%	Electric versions of all Renault models by 2022
4	General Motors	6.8 million 8.8%	30 new global electric vehicles by 2025
5	Hyundai	6.7 million 8.7%	23 global electric vehicles in 2025

37 million | 48%



both huge business success stories and catastrophic failures, just as the smartphone revolution elevated Apple and Samsung and smashed Nokia and Motorola.

First, electric vehicles are on the rise and will replace fossil fuel-powered cars over the next few decades. Cars last a lot longer than cellphones, so it will take much more time for the whole car park to be replaced. This is a surging wave, not a breaking one. Nevertheless, model ranges will evolve quickly. A host of major manufacturers are already committed to significant changes in the mix of vehicles offered. Importantly, the new technology offers consumers a host of attractive features – lower overall running costs, greater reliability, a much quieter cabin, more internal space and improved functionality. I’ve provided a few examples of the commitments made by the leading manufacturers above.

The above initiatives are critical, not least as these companies account for almost half of all new vehicles sold on the planet. Motor

manufacturers’ model range decisions play out over a decade or so, and minimising the complexity of the underlying technical platforms is essential for cost-efficiency, so these near-term actions will inevitably drive a long-term change in the cars we see on our roads.

Though naysayers often focus on the range of EVs, the practical reality is that most consumers will only need to charge their vehicles once a week. And, for those who can easily charge their car at home or at work, there is the comfort of knowing that the tank is always full. Other critics have described EVs as low-powered (watch this Tesla tow a Qantas airliner) or intended to “end the weekend” (watch how the new Hyundai Ioniq5 can electrify your campsite). These short-sighted sound-bite politics have not aged well at all.

Of course, the cost of electric vehicles remains an issue, in part because more of the lifetime cost of ownership is embedded in the upfront cost of the vehicle (the running

costs are much lower). Costs are now reducing steadily, however, as manufacturing begins to scale up and the various underlying technologies continue to improve. In addition, consumers are also learning that their electric vehicles continue to improve after purchase, as software updates increase not only peripheral functionality but the performance and safety of the vehicle itself.

Just as cellphones enabled new behaviours and business models, so too will electric vehicles. The typical EV has between 60 kWh and 80 kWh of storage capacity, equivalent to three to four days power use in a typical mid-sized family home. With car batteries now being designed to accommodate use as a power source for other equipment (including your home), EVs can also provide a practical source of back-up power too. And if you’re a tradesman, they can run your power tools. There’s even an electric bicycle designed as a tradie’s work-platform.

Though the global market for new vehicles



is large, worth something like US\$20 billion a year, even larger changes are afoot. Over the last five years, the economics of renewables have improved significantly. As a result, renewable energy sources are now cheaper than building new coal or gas-fired power stations and, in some locations at least, building new renewable energy generation is cheaper than the marginal cost of running fully-depreciated fossil fuel generation. The technological developments involved are

pension funds and other long-term investors have sought reliable, inflation-protected returns. The output of (eg) an industrial-scale solar energy facility is typically highly reliable and predictable. This allows generators to offer large corporate customers lower prices assured over the long term, in turn creating a highly attractive cash flow profile for pension funds. The cost of capital for a solar farm is thus, unsurprisingly, dramatically lower than for a coal-fired power station. Technological

continue to burn expensive fuel, so there is a minimum price they must earn to make a profit. In markets where renewables establish a solid foothold, the pricing dynamics rapidly become unattractive for coal-fired power in particular, thus accelerating the shift to what are now more efficient fuel sources. Meanwhile storage technologies are improving too and will ultimately enable much more resilient and flexible power systems.

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nothing new – the price curve for solar PV dates back over five decades to the 1960s – but the economic wave is now breaking, and breaking forcefully.

In 2020, Bloomberg New Energy Finance estimates that over half a trillion US dollars was invested in this energy transition, and yes, the pace of change is accelerating. One reason for this is that, unlike coal mines and oil rigs, renewables offer an attractive risk/return trade-off for infrastructure investors. This investment pool has expanded dramatically over the last twenty years, as

change is creating new financial business models too.

These shifts are the tip of the electric iceberg, once again thanks to economic forces. Renewable energy has virtually no marginal cost of production, meaning that producers can afford to bid very low prices into electricity market pricing pools (assuming they haven't already sold all their energy directly to end users) and they can shut off at a moment's notice. In contrast, fossil-fuel power stations take time to shut down and fire up, and in the meantime must

As with phones and cars, deeper changes are afoot too. In rich countries like Australia, where many people still live in houses rather than apartments, it is now economic to become energy self-sufficient with solar panels on your roof and battery storage in the basement (or outside, where your meter once stood). This eliminates the need for the expense of transmission and distribution – as well as the inconvenience associated with loss of power when networks fail and environmental risks that above-ground power distribution networks can create. In developing countries, homes can be economically electrified a half kilowatt at a time, enabling power to be brought to remote locations progressively, rather than depending on the hugely complex multi-billion-dollar projects that electrified now-developed nations in the twentieth century.

These developments will have profound knock-on implications in other sectors too, as they reverberate up and down industrial supply chains and shake up the status quo in ways that will almost certainly be great for



consumers. Energy-intensive activities such as data centres – and entire businesses such as Google – have shifted to renewable energy sources, reducing costs along the way. The prospects for many incumbents in the power sector, however, are not quite so rosy. As ever, this is a little ironic, as those businesses are better financed, better resourced and better connected by far than their upstart new economy competitors. Yet time and time again incumbents have failed to start paddling on the new technological wave until far too late to catch the ride.

Other technological waves are building rapidly. The agricultural sector faces profound changes over the decade ahead, as the shift to alternative sources of protein gathers pace, backed by around US\$1.5bn of investment in 2020 alone. Conventional agricultural production continues to evolve rapidly too, driven in part by dramatically greater use of data to optimise production and a growing focus on issues related to environmental sustainability.

Meanwhile, investors themselves are using data to improve their analysis of likely risks and returns in new ways. When I started my own career in finance over thirty years ago, company valuations were judged primarily by PE ratios and dividend yields. But, as spreadsheets enabled more detailed and more automated analysis, cash flow multiples, PEG ratios and discounted cash flow valuations and related techniques began to emerge. Over the last decade or so, more sophisticated and objective multi-variate analysis has become possible. Amongst

other things, this analysis has demonstrated that – with the right metrics – companies that perform better from a sustainability (or ESG) perspective generate better returns for lower risk. Technology and data are driving different business models in finance too.

This is not whimsical theory. Perhaps unsurprisingly, it turns out that both consumers and pension funds care about the impact of their investments on the environment and society too. The volume of money invested into funds that use ESG metrics as part of their decision-making has grown dramatically over recent years. In 2020, net flows into the industry reached more than US\$50 billion in the USA alone, more than twice the record level set in 2019, and ten times the level of 2018. In total, the top ten managers of “sustainable fund assets”, as tracked by Morningstar, had accumulated a total of US\$175bn of such assets as at 31st December 2020.

More broadly, companies that were early adopters of this approach have done phenomenally well. One of the oldest – Australian Ethical Investment Managers – has seen its share price increase by a factor of 43 since 1st January 2011, just over a decade. To put this in perspective, Amazon is up just 17 times over the same period.

Where next? Since 1990, one of the biggest areas of political controversy relates to mankind’s need to recognise that the earth is a closed system and that, as a result, our resources are constrained. In 1800, with under a billion people on the planet, this didn’t matter much. Communities had

learned that they needed to take care of their domestic trash, but they didn’t need to worry about how much fish they pulled out of the sea or how much carbon dioxide was emitted by power stations.

That said, physicists had already begun to contemplate the potential effects of changing the composition of the atmosphere. In the early 1800s, Joseph Fourier had already identified that the earth was a little warmer than it should be given the planet’s distance from the sun – the amount of solar radiation that warms the earth is driven by an inverse square law – and understood that this difference was a function of the insulating effects of the atmosphere.

If you understand this – and that the world is a closed system – then it is only a small step to recognise that changing the mix of gases in the atmosphere will change the amount of insulation and thus change the equilibrium of the planet’s temperature: *The establishment and progress of human society, and the action of natural powers, may, in extensive regions, produce remarkable changes in the state of the surface, the distribution of the waters, and the great movements of the air. Such effects, in the course of some centuries, must produce variations in the mean temperature for such places.*

Predicting the rate at which these changes are felt is of course a little more complicated. But – as with the implications of the emergence of cellphones or electric vehicles – the end-destination temperature that will be reached is mostly a matter of nineteenth



century physics. By the way, for any sceptics out there, you should know that it was a former Chairman of Shell that reminded me of this.

Two hundred years after Fourier first flagged these issues, the effects that he anticipated are now clearly impacting on the world, with temperatures increasing, sea levels rising and the annual bill for catastrophes growing significantly. In another shocking statistic, agricultural livestock and humans now account for 96% of the combined weight of mammals on the planet, massively outnumbering wild animals. With some 7.7 billion people inhabiting our one jewel planet, we now face the reality that the earth's physical capacity is a scarce resource, and it is increasingly in our short-term interest to use and sustain that resource carefully. The good news is that, as we've illustrated above, new financial technology is helping us to understand how to address matters related to sustainability in a manner that will help to improve returns and reduce risk, rather than being a cost. Or, as *Civilized Cycles* puts it, "Our green future is not a sacrifice, it's an upgrade".

So, what can leaders in business, finance and government do to make the most of these waves of opportunity, rather than be crushed by them?

1. Do not ignore the science! Understand the technological forces at work, and think

about them from outside the paradigm of your own business. In particular, look for input and perspective from advisors who are not caught up in your own corporate bubble and mindset – you will learn much more from those that think differently to you than from those that don't.

2. Strip down the economics! Look hard at the commercial implications and work through the implications for the ecosystem in which you operate. Pull apart business models and test all the assumptions. Make sure your strategic thinking includes robust quantitative analysis, otherwise you will overlook the biggest risks and opportunities.

3. Think long term! Whilst it can be hard to predict precisely when a new technology will really take hold, longer term implications are frequently easier to assess. Work with a team that will help you make decisions that align with the future, as this is a much safer choice than attempting to find life support for the status quo.

4. Paddle early! Very little investment is needed to make sure that you are building skills and capabilities in the most commercially important areas of innovation. These investments can be leveraged with time, rather than money – and done right can create way more value for shareholders than much larger transactions.

5. Fear complacency! Many businesses have been brought down by believing too strongly in their own story, or trusting in the power of their position as the 600 pound gorilla in the room. So make sure that your culture is prepared to test the status quo at every turn, and favours humility and enquiry over hubris and self-belief.

Even larger changes lie ahead. As we've explored before, the automation of decision-making that is being driven by robotisation and AI will create huge opportunity for some, and massive societal disruption for many. This has happened before, with the first three great revolutions resulting in stagnation in real wages for at least five decades and creating significant polarization of wealth. This time around, the wealth polarisation will occur between nations too, not just within populations in individual countries, adding significant risk. Indeed, the early signs of these effects are already writ large in the geopolitical landscape that has unfolded over the last decade.

These are both exciting and dangerous times for anyone involved with strategy, innovation, investment or M&A; far-sighted, evidence-based decision-making will be more important than ever. If we can help you with your toughest challenges, please call (or Zoom)! 📞

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Latest issue from Pottinger Perspectives:



Cooking up creativity

There is about half a cup of flour on the kitchen floor. It's thinly spread and has the distinct markings of tiny footprints. My two-year old daughter is nowhere to be seen. Until moments ago we were making 'rainbow biscuits' – biscuits covered in colourful, sugary '100s and 1000s'.

By John Sheehy

https://www.pottinger.com/uploads/1/9/5/1/19512909/pottinger_perspective_-_cooking_up_creativity.pdf

About Pottinger

Pottinger is a global advisory firm headquartered in Sydney and New York. We combine strategic, commercial, financial and transaction perspectives, and focus first on long term outcomes, to deliver commercial advice that is practical and complete. We navigate the uncertainty inherent in commercial decisions, helping our clients to identify value overlooked by others, and to avoid risks which others may not see.

Pottinger helps organisations to adapt, innovate and transform, by providing insight and advice on strategy and public policy matters, as well as the negotiation and execution of M&A and financing transactions. Our combination of strategic thinking, M&A advice and financing capabilities allow us to find innovative solutions to the challenges arising in industries facing dynamic change and disruption.

Our team has exceptionally broad and deep strategic advisory and transaction execution experience, encompassing all of the world's top thirty countries. Examples include:

- Advice on market entry, strategic repositioning, identification of new growth opportunities, spin-outs and other forms of restructuring and advice on strategic investments, using our proprietary Destination-led Strategy® methodology, together with analogous advice to governments on public policy;
- Advice in relation to large and small-scale acquisitions, divestments and takeover responses for both publicly listed and private companies;
- Capital optimisation and financing advice for large enterprises, together with advice on commercialisation planning, capital strategy and capital raising for emerging companies;
- Specialist input in relation to the design, formation, restructuring, sale and dissolution of large scale joint ventures and partnerships; and
- Identification and quantification of risk, by applying advanced statistical techniques to relevant data pools, thus simplifying decisions impacted by significant uncertainty.

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