FRONTIER TECH INVESTOR

ISSUE NO. 1 MAY 2016

AGE OF THE CYBORG

Eoin Treacy

The robots are coming! But don't fear a future where robots play a more prominent role. The reality is, robots and humans will work hand in (robotic) hand together. In this month's issue, I introduce a new recommendation designed to take advantage.

You just call out my name,

and you know wherever I am
I'll come running to see you again.
Winter, spring, summer, or fall,

all you have to do is call

and I'll be there, yeah, yeah,
you've got a friend.

You've Got a Friend, James Taylor

Welcome to your first monthly issue of *Frontier Tech Investor*!

It's great to have you on board. I've got a very exciting new opportunity to share with you. It's a firm that – if you happen to be a *Terminator* fan – may sound slightly familiar…

I'll explain exactly what I mean by that in just a second. But from the outset you should know this: the technology this company has developed enables people to do something that would have been absolutely impossible a decade ago. Some of the results it has had are nothing short of a miracle. It's a robotics firm that could revolutionise its industry, and I'm forecasting a 300%+ price hike from here.

Don't fear rapid change – profit from it

No one likes change. The most enlightened people teach themselves to embrace it but we have an almost instinctual fear of the unknown. That has stood us in good stead over millennia where we've had the luxury of time to warm up to new ideas.

But that has all changed in the last decade. The pace of technological innovation is so quick that we just don't have time to leisurely understand the full implications of new innovations before it is superseded by something else. The pace of change can feel overwhelming. In fact the emotional response to rapid change is often to believe that the best humanity could achieve is already in the past and that the old days were always better.

Intelligence bulletin

The sound of your skull discovered
Being identified by your skull is normally very bad news – but researchers in Germany are trying to change that. Using the microphones built into augmented reality glasses such as Google Glass, the SkullConduct system can produce a "sound signature" unique to a user's skull. Due to differences in anatomy, individuals' skulls are unique – and produce a unique resonance. Researchers from the University of Stuttgart, Saarland University, and the Max Planck Institute for Informatics were able to use the system to identify users with a 97% success rating.

Major breakthrough for self-driving cars
A Deep Neural Network (DNN) has learned to identify objects from photographs – and can identify shapes as well as humans. According to researchers at KU Leuven, mankind is "on the right track in developing machines with a visual system and vocabulary as flexible and versatile as ours". A research paper published online detailed a "dramatic increase in performance" for the system, "…quickly reaching levels rivalling humans". We're not yet at the stage where self-driving cars could use this technology flawlessly – but this paper gives us a sense of where the field is headed.

That's one of the primary reasons so many people exhibit fear at what the future holds. It's also one of the key reasons we've launched *Frontier Tech Investor* – to help you understand and profit from incredible new tech breakthroughs, and to help you master rapid change instead of fearing it.

For whatever reason, one of the industries that scares people most is robotics. Perhaps that's because of science fiction. Or perhaps it's that so many people have been the victim of their jobs either moving overseas or being replaced by machines that the reputation is hard to shake. For instance, in 2012 Philips opened a new factory in the Netherlands for the latest iteration of its popular wireless shaver. At its Chinese factory Philips employed several hundred people per shift to manufacture its shavers. At the new facility it has 128 robots and several dozen employees per shift.

That's an example not an exception. It points to a future where fewer people will be required for all forms of manufacturing, and factories will therefore be closer to the end users. Jobs will be displaced, lose relevance and new rust belts in currently vibrant economic zones are likely to emerge.

When people read stories like this it stirs a Luddite fervour for the way things were and the desire for things to just stay the same, even if that is against overwhelming odds and the unemotional logic of commerce.

But there is another side to robotics.

I chose to begin this issue of *Frontier Tech Investor* with an excerpt from James Taylor's song *You've Got a Friend* as it summed up the future relationship between humans and robots more poetically than I could. For now though, I'll eschew poetry and be blunt: **the robots of the future will work <u>with</u> us, not replace us altogether.**

That's what the company I have to share with you today does. It integrates high tech robotics with the human body to help people do things that would be impossible alone. It heralds what I see as the true future of robotics – incorporating incredible mechanisation with the human body. It's the age of the cyborg, but perhaps not as you'd imagine it…

When people and technology merge

Human and machine collaboration is something we've taken for granted since we first discovered how to make fire. For instance, a computer can beat a grand master at chess. But pair a machine and human together on the same team and they'll beat a computer operating alone.

The same principle is true across the board. It's known loosely as assistive technology – using robotics to work with us – to integrate with our lives and help us do things that are impossible for us alone.

Assistive technology helps us to do things we might not otherwise be able to do. In that regard it might be a robot, but it is not that different than a vacuum cleaner or car. It is simply a tool that allows us to be more productive. In much the same way that a car can be used to run people over it is primarily used as an indispensable mode of transport. The vast majority of robots will be the same. They'll do things that are too dangerous for people to do, they'll help us be more productive in our jobs and they'll pick up some of the mundane tasks we'll be too busy to do.

Pair a machine and human together on the same team and they'll beat a computer operating alone.

Assistive tech might mean giving us superhuman strength or speed. More on that in a second. But it's also just as likely to provide us with companionship or help around the home. After all, human beings are smart, innovative but above all else we are social animals. Yet with the march of urbanisation and labour mobility many people have never felt so alone. The range of social robots is expanding rapidly because sometimes you just need a friend.

Amazon's Echo is its first attempt at a social tool, but compared to what else is coming to market it's got a long way to go. SoftBank/Aldebaran's humanoid robot Pepper is only available for sale to consumers in Japan right now, but that is likely to change in the coming years. The company announced in March that it will be collaborating with Microsoft Japan so that Pepper will start work at stores to demo the Surface tablet and Microsoft's "internet of things" (IoT) solutions.

Paro the robot seal has been featured on *The Simpsons* and more recently on the Netflix show *Master of None*. It is a replica seal that is specifically designed to elicit an emotional response from people and has been particularly visible in hospitals and nursing homes where it is used in much the same way as companion animals.

Blue Frog Robotics has raised over $3.7 million on Indiegogo for its JIBO robot, which is about as close as one is going to get today to R2-D2 from *Star Wars*. Cynthia Breazeal's creation is a real life helper robot, and the first versions are shipping to early adopters now.

Robots are beginning to walk out of the lab and into our homes and with scale, prices will come down. They will always be a premium product, but right now costs are in the $750 to $2,500 area which is not beyond the means of most middle income consumers.

Right now these kinds of robots are handy gadgets only the most technologically addicted are likely to pay for. Their utility will improve, however, as they become health companions; monitoring not only facial features but our vital signs too. As early as 2013 Microsoft's Kinect sensor could read your heart rate from four feet away. It's not much of a leap to expect companion robots to be able to do the same thing in the not too distant future.

So how else can robots assist us?

Robots on the battlefield

Robots are already in our factories, increasingly in our homes and providing us with entertainment. However, while the vast majority of uses are peacefully mundane and incredibly useful there is no getting around the fact robots have potential as military tools.

The USA's Defense Advanced Research Projects Agency (DARPA) likes the look of *Iron Man* and wants to have suits that might not be able to fly but would allow soldiers to walk further, carry more equipment, offer protection from the elements and allow them to arrive less fatigued.

It's not just the military that has an interest in creating more efficient personnel. Daewoo is experimenting with a powered suit for its shipyard workers that allows them to lift a 30kg piece of iron with ease. In a shipyard where that kind of activity is mundane there are obvious advantages to pairing the sensitivity of a human with the brawn of a robot.

Which all brings us to our latest recommendation. It's a company that uses its specialist skills in the field of robotics to do something incredible for humanity: to give the disabled their mobility back.

Introducing Cyberdyne and the miracle of robotic exoskeletons

Christopher Reeve fell from a horse in 1995, and the damage he sustained to his spinal column left him a quadriplegic. Seeing Superman confined to a wheelchair and relying on carers for his every need broke the hearts of everyone who saw him. It was an enormous tragedy to see someone so filled with vitality struck down in his prime by a freak accident, and yet these sorts of injuries happen every day.

Reeve was not one to lie back and accept what had happened to him. He set up a foundation and worked tirelessly to fund research into helping victims of spinal injury walk again.

His dream was for stem cell research to progress quickly enough to give him back his mobility. That may one day be the case. But progress has been slow. Instead the answer may lie in a different direction: cybernetics.

When we think about people who lose the use of their legs we often tend to think of those who have been in accidents such as falling from a horse, a skiing injury or motorcycle accident. However, that would be to ignore the legions of people suffering from diabetes who lose the use of their legs as their illness progresses, those with multiple sclerosis who suffer from muscle degeneration, or people who have Parkinson's disease and have difficulty controlling tremors. When we think in those terms the scale of the issue as it stands today is daunting enough, but it is only likely to get worse in the future.

Now let's think about the issue elderly people have with getting around. Often as people age, walking around the shops, taking the stairs to the 2nd floor of their homes or just getting up to make a cup of tea becomes a challenge. We can look forward to a future where the quality of people's lives will be better in later life and where health outcomes can be expected to improve, but what about right now?

Cyberdyne shows the softer and utilitarian side of robotics

Enter a company like Cyberdyne. If you're of a certain age it probably sounds familiar, and it goes to show the Japanese have a sense of humour. In the original *Terminator* movies, the company that was touted as having developed the Skynet software, which initiated Judgement Day, was called Cyberdyne Systems.

As if that wasn't enough, the real version does in fact build cyborgs! What's more, its main product, the Hybrid Assistive Limb (HAL-5), shares its acronym with the insane artificial intelligence in *2001: A Space Odyssey*. Before you panic these are not the same Schwarzenegger-esque creations that tore whole city blocks apart looking for Sarah Connor. No, these look more like The Wrong Trousers from *Wallace & Gromit* or the robotic suit Sigourney Weaver wears in *Alien*. It shows the softer and utilitarian side of robotics.

Cyberdyne has a product in the market right now that is a suit you wear to help out with the issues you encounter on a day-to-day basis when your legs don't work anymore. They are being used in 130 Japanese hospitals, have been accepted into the German public healthcare system and the company has applied to have its products licenced for use in the USA.

In the coming decade if you are in need of rehabilitation the chances are that you will be introduced to a HAL-5 system so that your health can be restored. One of the biggest challenges when recovering from a stroke is retraining the brain to associate movement with intention. The HAL-5 system does just that as it guides muscles to move in just the right way and helps them along.

Most of what DARPA wants robots for is to replace human beings in extremely dangerous scenarios such as bomb disposal, radiation hot spots and even burning buildings. Cyberdyne really

Robots could assist people around the home

earned its stripes during the Fukushima nuclear emergency when it developed a prototype suit in quick time so what might better be described as jockeys could walk into the hot zone with the aid of the strength and mobility of a powered suit. That was a big step for Japanese emergency response robotics, because before that all the tools that had been in use were sourced from overseas.

Human brain, robot muscle

The HAL-5 system works by sensing the electrical impulse sent by the brain to the muscle, then automatically tells the exoskeleton to move so the movement one experiences is natural and no time lapse is experienced. That means it is highly effective at helping to retrain the brain to restore muscle control after a stroke. However, Cyberdyne has a bigger vision than that because it wants to allow people with chronic back pain to re-enter the workforce in roles that require physical activity.

Cyberdyne's lumbar support apparatus does just that. It helps to take the pressure off the lower back and spinal column when lifting heavy objects or bending over to pick stuff up. It envisages warehouse workers, supermarket shelve stockers, moving company people etc, wearing these pieces of equipment so they can work without the risk of injury and do so for longer and with heavier loads than they might ever have imagined possible.

If you think about it, the powered exoskeleton represents the perfect marriage between the knowledge, sensitivity and imagination of the human with the raw strength and mobility of a robot. In very simple terms, Cyberdyne is creating tools that will allow people to be more productive in their jobs rather than seeking to replace them. The revolutionary part of this equation is that now people have a real chance to compete with fully automated systems, because we have tools to help us focus on the very real advantages we have over machines.

Cyberdyne is listed in Japan under the code 7779 and has a separate listing in Germany (the ticker is 8C4), and rumours abound that it will be seeking a full Nasdaq listing later this year. Right now it has a not particularly liquid American Depositary Receipt (the ADR's ticker is CYBQY). The Japanese listing has a market cap of $4.430 billion and its Initial Public Offering (IPO) was in 2014 (We will be using the Japanese listing in the portfolio).

They moved into mass production of the HAL-5 suit last year, and

demand has been brisk. The challenge will be to increase scale beyond the 500 units per annum it is currently capable of. That would be great for profitability as well as giving the company the ability to reduce the price point of the suit. Cyberdyne is not the only company in the world building exoskeletons. There are a number of others in Japan and South Korea, and the USA has a number of startups. However Cyberdyne was the first, has the most experience and importantly is the only company with a product in the market right now. In addition it has already gone through the lengthy process of receiving permits from the USA, Europe and Japan to sell its products, which gives it a not inconsiderable lead time before it has any competition.

The share ranged mostly below the psychological ¥2,000 level for 19 months before breaking out in late March. It continues to extend the breakout and is one to watch for a pullback to the ¥2,200 level where a long position would be well within the risk/reward parameters for a medium-term trade. Consensus earnings forecast are for earnings to pick up substantially as the company expands production. The mean estimate is for revenue to double within the year and for the company to become revenue positive by Q2 2017. With the only exoskeleton product in the market that has received Japanese and EU approval (It's still waiting for the US go ahead) for sale this is an achievable target, and the company has the potential to outperform other potential competitors. When we consider the upside potential for the share, a reasonable 12-month target is ¥4,000 while over the next five years the potential for a test of the ¥10,000 area is not overly conservative.

The greatest risk is that the uptake for this still emerging technology is not as brisk as expected. Next in line would be the potential for a competing company to come to market with a cheaper, lighter product. Eventually Christopher Reeve's vision of a stem cell solution to immobility could become a reality that would eat into demand. Advances in hydrogels will eventually also allow mechanical implants to be placed in our limbs, but that is still a long way off.

Name:	**Cyberdyne**
Ticker:	**7779**
Exchange:	**JP Tokyo**
Price close of 03.05.16:	**JPY 2353**
Market Cap:	**JPY 470,787.2M**
Buy Between:	**JPY 2,200 and 2,500**
One Year Forcast:	**JPY 4,000**
Five Year Forcast:	**JPY 10,000**
Five Year Performance:	**2015 31.15%**

(please note full 5 year perforance figures are not available the IPO was issued in 2014)

A detailed look at the exoskeleton industry

Mischa Frankl-Duval
Research Editor,
Frontier Tech Investor

Given the fact that this month's tip – Cyberdyne – is an exoskeleton and robotics firm, I've spent the last few weeks researching bionic exoskeletons. I've spoken to people all along the supply chain, from the CEO of an exoskeleton development company to a pioneering end user of the product. Their aggregate view, in short, is of a promising technology that has a very real chance of changing physical disability forever – but isn't yet perfect.

The view from the top – Tom Looby of Ekso Bionics

CEOs tend to be their company's biggest cheerleaders, and for a number of good reasons. A rogue comment from the top dog can knock double digits off the value of a company's shares. So ultimately, CEOs have to puff up their businesses to keep themselves in work.

Even if they weren't obliged to talk up their companies, you'd hope CEOs would do it anyway. If you're at the helm of a major company, you should believe the work you're doing is important.

Tom Looby is the CEO of Ekso Bionics, a US-listed exoskeleton company that produces the Ekso GT. The 23kg exoskeleton is designed to help victims of neurological damage during rehabilitation. A patient is strapped into the suit, which braces against his or her body at several points. Carbon fibre plates run under the feet. Supportive rods run up the patient's legs. Harnesses hold their calves, thighs, and upper body in place.

Once a patient is assisted into a standing position, he or she can walk by leaning into a stride – the exoskeleton's motorised frame does the rest.

When I spoke to Mr Looby earlier this month, he pointed out that the Ekso GT had just received its widest ever US Food and Drug Administrative (FDA) approval; it is already in use for victims of spinal damage, and the suit is newly available to victims of stroke.

Exoskeleton treatment, Looby told me, "is the here and now".

He clearly believes in the work his company is doing. But he's well aware that there's plenty of work to be done before exoskeletons become the standard treatment for spinal and neurological rehabilitation.

"Simply having a novel device that does something really great doesn't always win the day. You have a lot of hard work to do to produce clinical evidence, to educate the key opinion leaders.

"This is all work our company and some other companies are trying to do. But the benefits are real."

Speaking to Looby was fascinating – but it wasn't enough. So, a week after we spoke, I went to Royal Buckinghamshire Hospital in Aylesbury to see an exoskeleton in action. I wanted to discover just how real these benefits were and to learn more about Ekso Bionics' competitors.

Feet on the ground – meeting the patient

Steven didn't think twice about his sore back when he woke up in mild discomfort seven years ago. He woke up, went about his daily business, and went to bed.

> "There's an element of freedom", he told me when we spoke at the end of the therapy session. "I'll leave here as high as a kite when I go to work.

When he woke up the next day, he couldn't move.

Medical tests confirmed damage to his T4 vertebra. From one day to the next, Steven was paralysed from the chest down and no one knew why.

Today, Steven mostly gets about in a wheelchair. He still works and can get around with a degree of independence. He comes to the Royal Buckinghamshire Hospital once a fortnight for physical therapy. As one of the few patients in the UK using exoskeletons for physical therapy, Steven is well placed to discuss how using one feels – and how different models compare.

I sat in on one of his sessions, during which he wore an Indego. The Indego weighs 11kg – around half the weight of the Ekso GT. That, Steven tells me, makes a huge difference.

There's much more of the GT than there is the Indego. The latter has no back casing and no straps. Instead, the four-piece suit consists of two foot-plates, lower-leg support, upper-leg support and a wide, carbon fibre belt. It takes a few minutes for Steven to don it with the help of two physios.

The suit absolutely blew me away. Once in a standing position, Steven could walk – not rapidly, but at a reasonable pace – up and down the length of the ward. On a good day, he told me, he could even take a stroll outside.

Steven wasn't walking unassisted at any point. He leant on a hefty Zimmer frame and had two therapists by his side at all times. But he was walking – something he would never have been able to do a few years ago.

Before he was using exoskeletons, Steven's therapy regime mostly consisted of standing still. For half an hour a day – and an hour on weekends – Steven would stand still in a supportive frame to maintain mass and circulation

in his legs. Those processes were essential for his health – but they were some way short of full-on exercise.

Walking with an exoskeleton is by far the most demanding exercise Steven does – and though a stretch in the suits can give Steven a real physical boost, the prime benefit is psychological:

"There's an element of freedom", he told me when we spoke at the end of the therapy session. "I'll leave here as high as a kite when I go to work.

"As able-bodied people you take for granted that you get out of bed and walk around. But having that taken away puts a whole new perspective on life. For me to be able to stand up and talk to someone face-to-face is a big thing for me mentally, for my confidence. It does me a lot of good."

At present, Steven says, the suits are slightly tricky to use. Over the last fifteen months of treatment he's developed a knack for it, but the feeling is still a little unnatural. And, of course, he still needs help to walk.

Over time, these suits will become better, smaller and lighter. Steven hopes he'll one day use a suit unassisted. If that does happen, it'll become feasible for Steven to go to the park with his children, go shopping or stroll across town – all on his own two feet.

Until then, Steven is still reliant on professional help to walk – but the psychological boost it gives him is testament to the value of the human value of this technology.

Exoskeletons are clinical tools – for now

Watching the Fisher in a clinical setting was truly astounding – but that's the only setting we'll be seeing it in for the foreseeable future. Though exoskeletons are being touted for industrial and military use, they are not widespread in either field. The everyday use of this machinery by civilians is some way off.

Understandably, these systems are advancing fastest in fields where there's money to be made – but with time, these systems could be making millions of humans stronger, from battlefields to factories. Strap yourself in – it's going to be a slow, slightly awkward, but encouraging ride.

How our recommendations work as part of a bigger portfolio

Eoin Treacy
Investment Director

Every so often I get an email that frames a question so eloquently and succinctly it strikes a chord with us because it touches on a subject we grapple with constantly. This is a good example of such a question:

I find the research in Exponential Investor interesting but, like many investors, would only commit a small part of a portfolio into "risky" areas. This makes it impractical to buy individual stocks AND diversify.

Can you back up your articles with suggestions for diversified funds/ETFs of the "best fit"?

For example, I'm impressed by battery technology (but want to diversify away from just Tesla into "flow" etc) and by the DC (solar) electricity grid being developed across the Middle East/Europe and, I understand, parts of the US. Conventional Clean Energy ETFs don't seem to capture these advances because, I imagine, the underlying indices are slow to update. I encountered the same problem during the fracking *boom - plenty of individual stocks, no good-fit ETF (or conventional fund, for that matter, though I would tend to ignore these because of cost).*

Thanks for your help.

Humans and robots, working together

As you'll have noticed, the note refers to *Exponential Investor*, our free sister publication. But it's just as relevant – in fact, perhaps more relevant – for us here at *Frontier Tech Investor*, given the fact we recommend specific companies.

Identifying the right theme is a major undertaking, but selecting the correct time is even more important. Making sure the vehicle we choose to participate in is the right fit for the type of investors we are is an even greater challenge. That is particularly true when we write for such a wide audience.

I agree it is often difficult to find the best investment vehicle to give voice to a theme we might be interested in, not least because the performance might not gel with the companies we most want to own. Let me explain a little why that is.

The popularity of exchange-traded funds (ETFs) has grown exponentially over the last decade in line with the popular orthodoxy of modern portfolio theory (MPT). It holds to the view that it is nigh impossible to outperform an index, so why try. The holes in this argument are wide enough to sail the QEII through, but that is a discussion for another day. The result is that ETFs are proliferating because tracking an index is considered the best way of participating in the market if one wants to benefit from the long-term upward bias to stock prices. They also tend to have lower fees than managed funds.

Ask yourself how does an ETF issuer like iShares, Global X or db X-trackers make money when fees are so low? The simple answer is that they depend on the growth in assets under management. They also benefit from the fact set up costs for ETFs are low. They issue large number of funds in the hope that some will become popular with investors which will boost fee income. The vast majority of ETFs are small and illiquid, while some of the most popular have billions under management. Fund marketers therefore have a vested interest in listing as many funds as possible because the profitability of the business model depends on simply playing the numbers.

ETFs become popular when they point at a theme that is currently capturing the imagination of the public. They often languish until people start to notice that various constituents of a sector began to perform. When investors find one that tracks the index and it has a reasonable record of performing in line, assets begin to move in. That generally means prices have already started to move before ETFs have sufficient assets to be liquid enough to trade easily.

Let's next think about the best time to own any fund. It is most likely to appreciate when most of the constituents are going up. At the beginning of a new thematic move, a small number of shares will be responding to the new sources of demand overtaking the market. As the theme gains more adherents the consistency in the performance of the fund would be expected to improve as more of the shares perform in a similar manner. As the theme reaches a point of exhaustion the commonality of the move will begin to deteriorate, so the fund would be likely to underperform the sector in the latter stages of the move even if a smaller number of shares are still hitting new highs. That suggests the best time to own an ETF is in the middle of a trend, because it will underperform at the beginning and the end.

I know I said the number of ETFs has proliferated but that growth has been limited by the imagination of the marketers and their ability to compile indices to track. I was writing late last year about that lack of imagination as the medical devices sector began to take off. Within the healthcare sector, biotech attracted waves of new capital as long as prices were rising and the biotech ETF saw assets under management explode. It became the primary vehicle for many investors to participate in the sector. When it rolled over it took much of the

healthcare sector with it. One of the reasons medical devices was relatively immune to that decline was because despite the fact it is filled with multibillion dollar companies there is no ETF. There were no leveraged holders rushing for the door, so the shares held their gains and in fact did not stop going up.

There will be times when the instruments we cover have a reasonable proxy in a fund or ETF, but that will not always be the case and it might not even be because some of them are evolving companies. It might simply be because they are too new, and too revolutionary, to have many copycats yet or are simply overlooked.

There is one more topic that I would be remiss if I did not discuss. That is the role the Financial Conduct Authority (FCA) plays in regulating what we are allowed to talk about. In the aftermath of the financial crisis people wanted tighter regulations that clamped down on the practice of trailing commissions and conflict of interest they engendered. That business practice can only be regarded as good news. However, some of the new regulations mean that there are some marketing restrictions on the sorts of funds we can recommend. We are not a fund issuer, so that also precludes us from packaging together a group of shares that would give our ideas more accessible appeal.

Sticking with the FCA, many retail clients are recommended a split between fixed income and equities with a ratio of 60:40, 50:50 or 40:60 depending on one's risk appetite. The reason for such a plain vanilla type of strategy selection is because it is unlikely to be questioned by the regulator and therefore protects the financial advisor from potential litigation. I don't know about you but that doesn't strike me as the best motivation for structuring a portfolio. Nevertheless, if you stick with a diversified portfolio equally weighting bonds and equities then splitting up the equity into domestic, international, large cap and small cap makes sense for diversification.

The kinds of shares we will be recommending will fall into all of these categories but might all be described as high risk, because we are looking to make outsized profits with the understanding that losses are possible. A potential investor might consider investing the small cap portion of their portfolio to our recommendations since they both represent high risk ventures, even though on a risk parity basis our recommendations will have a more diversified market cap profile.

We will make every effort to identify a less focused alternative but will always be with the proviso that the proxy's performance is unlikely to be as good as the raw instrument we research. I want to finish by answering your initial question about a fund catering to solar technology and batteries. There are funds that invest in solar and others that invest in lithium and batteries, but I don't know of one that has a mandate to invest in both. Whether you decide to go for either of these kinds of funds, bear in mind that the technology might be very exciting but the share prices are very heavily influenced by the relative cost of oil.

Energy

Company	Ticker	Date	Price Then	Price Now	Gain/ loss %
Orocobre Ltd	ORE. AX	07/04/16	A$ 2.92	A$ 3.43	17.47

Technology

Company	Ticker	Date	Price Then	Price Now	Gain/ loss %
Cyberdyne	7779	30/05/16	JPY 2,353	JPY 2,353	0

Medical

Company	Ticker	Date	Price Then	Price Now	Gain/ loss %
Acorda Therapeutics	ACOR	07/04/16	$ 27.98	$ 27.19	-2.82
Intuitive Surgical	ISRG	07/04/16	$ 626.12	$ 633.36	1.16

Moonshot

Company	Ticker	Date	Price Then	Price Now	Gain/ loss %
SolarWindow	WNDW	07/04/16	$3.96	$4.19	5.81

For the full portfolio including live prices, please visit the Frontier Tech Investor subscriber area. **You can view that by following this link.**