



In this issue:

- The \$100bn question
- Hypersonic is the next big thing
- UFOs are real

The Drone Busters

Eoin Treacy, Investment Director



“A nation’s ability to fight a modern war is as good as its technological ability.”

– Sir Frank Whittle, inventor

of the turbojet engine

As if the trade war were not enough, global uncertainty took a significant leg higher on 14 October. A flight of drones and cruise missiles rammed into Saudi Arabia’s primary oil processing and export infrastructure and knocked out 5% of the world’s oil supply in one fell swoop.

This is a big deal although, perhaps not in the way you might expect. Geopolitical advantage is

all about a technological edge and that is what I want to write to you about this month.

The simple fact of the matter is, this event has been catalytic for one UK company that has been through years of development work for its products. Now is the time for it to really capitalise on the market opportunity which is about to literally explode on the upside.

The first question most people have asked is how on earth could such a surprise attack take place? How is it possible, with the quantity of money Saudi Arabia spends on its military, and with the heavy US presence in the region, for so many drones/cruise

missiles to strike their targets with such accuracy?

I’ll answer these questions but the much bigger question is whether we are now at the peak of the military drone cycle. That is where the investment case resides.

We need to look to the future, not the past

The simple answer to the first few questions is that the radar net over Saudi Arabia is a lot more porous than anyone was willing to admit. The nation’s primary energy assets are very geographically concentrated which everyone now knows makes them a big target.



Perhaps most important, the Patriot missiles Saudi Arabia acquired from Raytheon were designed to shut down Scuds 30 years ago and are not particularly effective at terrain-following cruise missiles with a low radar signature. That's particularly true when their inbound vector was surprisingly distant from where the nation's focus of attention lay.

Oil prices understandably popped on the upside, posting the single largest one-day rally in the oil contract's history. That was enough to get just about everyone's attention. The price has since pulled back to where it was trading ahead of the attack.

So, trading the oil spike was a short-term opportunity. That's not the focus here in *Frontier Tech Investor*. My sights are trained on

oil and gas sector really is a game changer. It has turned the country from being the world's biggest importer to being one its most significant exporters. In the process it has introduced a lot more stability to the global oil market than anyone ever thought possible.

One of the most important characteristics of unconventional wells is their early peak production profiles. Initial production tends to be highly prolific but it peaks quite quickly as the nonporous rock the oil comes from does not allow it to flow for very long.

That means if production companies want to keep ramping supply up, they have to keep drilling. That's a very capital-intensive business model and it

that was never possible previously and ensures peak-to-trough swings are less severe, and don't last as long as they used to.

The change to the supply side of the argument is a true game changer for the global economy but the declining share of energy in the global GDP is an even more important consideration.

Oil use is going to be around for a long time and the range of products we develop from it will increase but internal combustion's role in transportation is going to decline. Oil is just not going to be as important to the global environment in future as it is today. That's a really big problem for Saudi Arabia.

The \$100bn question

Oil is just not going to be as important to the global environment in future as it is today.

More than a few media outlets have referred to the Saudi attack as a game changer but I believe that is a mischaracterisation. The attack is an iteration of the much wider regional conflict where Saudi Arabia and Israel are fighting a number of proxy wars with Iran. From that perspective it does not matter where the missiles originated, it only matters what the target was.

It is Saudi Arabia's financial response that is most notable. There was a great deal of speculation it was going to float Saudi Aramco on the stockmarket about two years ago. Instead, the kingdom decided it was not the right time and spearheaded the acquisition of Saudi Basic Industries Corp (SABIC) in March.

what this event tells us about a new, long-term opportunity that could prove many times more profitable.

If this event had occurred a decade ago, we would be looking at a much more significant move, but today Saudi Arabia is not as important to the global energy sector as it used to be. Surging oil prices cause recessions because they represent a tax on consumption so this is a very important point to understand.

The US's onshore unconventional

works when prices are higher than about \$50.

What is less well appreciated is, it gives unconventional drillers a great deal of flexibility in their production. Conventional wells are cheaper to drill but once they start production, it is quite expensive to stop them from producing.

With unconventional wells, companies can tailor production to the price because of the constant drilling requirement. That creates a supply elasticity



Following the drone attack, the Saudi Aramco IPO is back on and it is in a hurry to get it done. Analysts were called into a meeting last week in Saudi Arabia and the initial date for the share to start trading on the Saudi Tadawul market is early November.

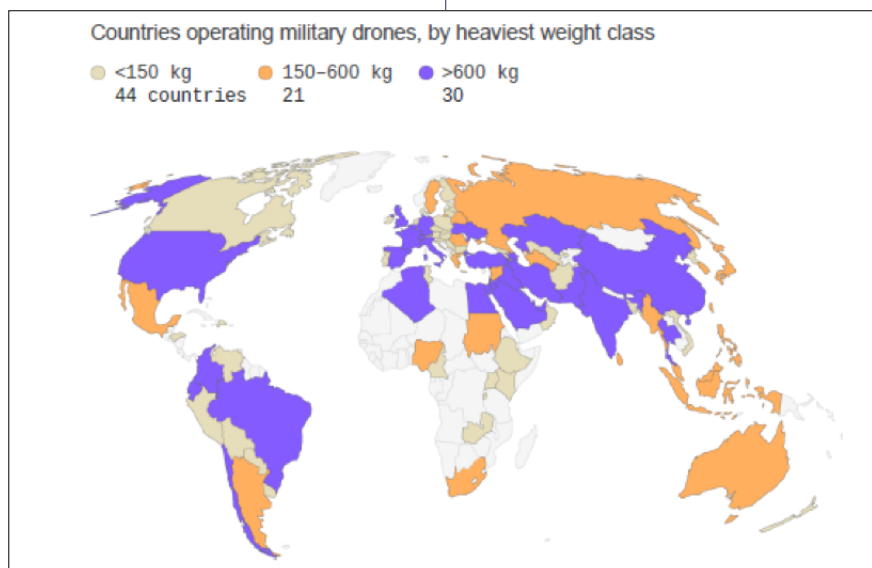
Even more noteworthy is the desire by the kingdom to secure the \$2 trillion valuation it wanted when the IPO was first proposed. Investors at the time were unwilling to ascribe more than \$1 trillion in value to the company which was one of the primary reasons for pulling the IPO.

The Saudis' plan is to sell 5% of the company because that equals a nice round \$100 billion lump of cash. The big question we should now asking is what is it going to do with the money? Is it going to be guns or butter?

In simple terms, is it going to be weapons or the new city Mohammed bin Salman has been promising? The reason I am writing to you this month is because I believe the answer is going to be a clear prioritisation of weapons. They don't have much choice.

The entire economy is based on the health of the energy, chemicals and aluminium industries. It's all well and good to talk up the prospects of a new economy, looser social strictures and a modern technologically advanced city-based population, but that means nothing if the border cannot be secured.

Saudi Arabia ran a deficit of



Source: Axios

\$173.858 billion in 2018 and is looking at a similar figure this year. That's significant for a country with a GDP of \$800 billion. If the proceeds from the IPO range between \$50 billion and \$100 billion that won't cover the deficit for even a year.

The IPO is in my opinion more about building a war chest than any loftier aspiration. There is a clear possibility it will spend the lot on arms.

One upshot of escalating tensions in the Middle East is the region is still the world's single most important producer of oil. A war between Saudi Arabia and Iran would certainly result in higher oil prices, regardless of how much the US is producing.

That suggests the chances of an open war will be contained but the defence against drone attacks will be boosted and offensive capabilities will be bolstered. This is urgent which is why Saudi Arabia is now in such a hurry to get the IPO of Saudi Aramco done.

The next drone attack could happen any day and that means there is a clear rationale for buying into the trend of the most effective counter measures now because orders are going to be stacking up very soon.

New war order

What's going on in Saudi Arabia is important because of the effect it could have on the oil price but it is hardly the only flashpoint globally. China is swiftly becoming one of the world's most significant military hardware exporters. There are no points for guessing what its number one export is – military drones.

As the world's biggest oil importer, China has a clear incentive to try and balance its trade with the biggest exporters by selling weapons, in exactly the same way that the US does. That obviously sets it up as a strategic competitor with other major arms manufacturers.

It has already made sales to a number of countries in the



Middle East like Saudi Arabia and the UAE. China's biggest customer for military hardware is Pakistan. China also buys a lot of oil from Iran and those purchases were an important reason the country was excluded from the raft of additional tariffs imposed on Iran earlier this year.

Military drones are already big business. About half of all of the

thing to get a grip on is the ever-changing nature of warfare where the punch and counterpunch nature of conflict leads to constant technological evolution. It's that next step where one UK company has a market leading advantage that could see it become a major defence contractor or simply taken over by one of the major players.

Russia currently has the only operational HCM. It is called the "Dagger" or Kh-47M2 and has a reported top speed of Mach 10; roughly 7,672 miles per hour. At that speed it could cover its 1,200 miles range in less than ten minutes. That's the distance from London to Rome in nine minutes, which leaves very little time to get off a response, much less find an air raid shelter.

Military drones are already big business. About half of all of the world's militaries are deploying drones today.

world's militaries are deploying drones today. That is about the clearest example one can think of for the proliferation of technology as costs come down.

Technology is inherently deflationary so while only a decade ago military drones were too expensive to commission, today they are much more accessible and easier to mass produce. What this tells us is the attack on Saudi Arabia is not an isolated incident.

Instead it is an example of the kind of attacks that are likely to become commonplace over the next decade. The military theatre has simply moved into a new era.

So, what will a military confrontation look like in the future? We are all still getting to grips with the attack that slipped passed surveillance and put 5% of the world's oil out of commission.

However, the most important

Hypersonic is the next big thing

The clearest conclusion I can see is the nature of future warfare is going to be hot. China and Russia have both released videos of hypersonic missiles. There are generally two types which are being talked about. These are hypersonic glide vehicles (HGVs) and hypersonic cruise missiles (HCMs).

HGVs are launched by an intercontinental ballistic missile. As they fall back to earth, they pick up hypersonic speeds as a result of acceleration due to gravity. They are the technological equivalent of a manoeuvrable meteor and would totally obliterate anything they hit once they make landfall.

HCMs are similar to what we think of when we look at a cruise missile but they have more sophisticated engines and travel a lot faster.

Since the dagger is launched from a MiG-31BM, which has a range of 1,860 miles, that suggests an intercontinental range. Russia is also working on another HCM with India, the BrahMos-II, which has reportedly reached a top speed of Mach 7 and has a range of 180 miles.

Russia claims it has an HGV (the Avangard) but has only shown animations of how it would work. Meanwhile, China has the only known operational HGV, the DF-ZF. It has a range of about 1,242 miles and it says it has clocked speeds of Mach 5 and Mach 10. China anticipates putting it into service some time in 2020 but analysts have raised questions about whether it has the ICBM technology necessary to launch it.

The US has clearly stated it does not have a reliable method to combat this evolving threat and relies instead on its nuclear deterrent to counterbalance the increasing risk from a hypersonic attack. Of course, that does not mean it isn't looking into it.

The X-37 space plane has been setting records for a drone in space and recently completed its most recent trip. Here is a section



from Air & Space magazine:

Project officials have revealed that the X-37B's maneuvering engine runs on hydrazine and nitrogen tetroxide, and that it uses a different kind of thermal protection than NASA's space shuttle did. The durations of the first three missions are a matter of public record (224 days, 469 days, and 674 days), and while the orbital parameters aren't officially disclosed, amateur astronomers have been able to spot the mini-spaceplane through telescopes and figure out that it's been orbiting at relatively low altitudes.

The question anyone should be asking is not how long an unmanned drone can stay in orbit but whether it is simply a prototype for a HGV which has already got plenty of experience manoeuvring. If it can land successfully, it could just as easily pick up speed and hit a target, hard.

RAND Corp, the global policy think tank, is advocating strongly for non-proliferation of hypersonic technology. It estimates Russia, China and the US will have fully operational arsenals of hypersonic weapons within the next decade.

It is inevitable other countries will attain the technology. The most important point it makes is that hypersonic weapons are a first strike weapon.

The increasingly tense relationship between the US, China and Russia is a cause for concern and so is the military

posturing the respective countries are engaged in.

It is likely the ship has already sailed on non-proliferation since Russia is helping India attain the technology. That virtually ensures Pakistan will do whatever is necessary to get it too.

RAND Corp lays out four different scenarios for how this kind of technology could lead to dangerous escalations.

The first is "devolution of command and control of strategic forces". The risk of swift attack increases the incentive to remove control from a single individual and give it to individual military commanders. That increases the risk of accidental war.

The second is "wider dispersion of such forces". This means ensuring weapons are constantly on the move so they can't easily be targeted but that increases the risk of them falling into the wrong hands.

The third is a "launch-on warning posture". This strategy was an integral part of the mutually assured destruction dictum during the Cold War and allows for senior commanders to retaliate immediately on seeing evidence of a launch from an adversary.

The fourth is "a policy of preemption during a crisis" or simply, first strike.

The problem with proposing non-proliferation is it is woefully late. Lockheed Martin has a website dedicated to the sector with

the title "Cleared for Takeoff". However, the most important development is likely the application of the technology to civilian flight.

Boeing released its vision for what a hypersonic passenger plane will look like earlier this year. That puts to bed any talk about containing the spread of hypersonic technology because the only way Boeing makes money from building those planes is by selling them.

The return of Thucydides' Trap

You may have seen some talk of the Thucydides' Trap from back in 2017. The title of the thought experiment stems from this quote from Thucydides: "It was the rise of Athens, and the fear that this instilled in Sparta, that made war inevitable."

Basically, it is the contention that when major powers clash, the result has almost always been war.

Take a look at the graphic on page 6 from the Harvard Belfer Center for Science and International Affairs. There are two major points that I see with this graphic which I believe do not get nearly enough consideration.

The first is the competition between the US and UK had been largely settled during the American Revolutionary War in the late 18th century. By the early 20th century there was no need to settle a major disagreement.

The second is the three "no war"



events from the 1970s onwards have all occurred during the period of anxious stability that accompanied the threat of mutually assured nuclear destruction.

The only reason to believe that the period of relative stability between great powers will persist is if no country comes up with a weapon that makes nuclear weapons obsolete. A country in possession of such a weapon would have a significant incentive to either use it to gain maximum geopolitical advantage or keep quiet about it and only use it in extremis.

The evolution of offensive cybersecurity measures (that was the reason we invested in SAIC) and the increasing ease with which companies are getting vehicles into orbit (which is why we bought Northrop Grumman) suggests we are rapidly approaching the era of nuclear obsolescence or something very close.

The risk of a major war is lot closer than anyone is willing to consider. It's an important consideration for a technology investor because wars are generally associated with massive leaps in technological know-how.

UFOs are real

Against this background I believe it is no coincidence that the US Navy has clearly stated the footage recorded by Navy pilots of unidentified aerial phenomenon, or what the rest of us call unidentified flying objects (UFOs), are real.

	Period		Ruling Power	Rising Power		Result
1	First half of 16th century		France	Hapsburgs		War
2	16th–17th centuries		Hapsburgs	Ottoman Empire		War
3	17th century		Hapsburgs	Sweden		War
4	17th century		Dutch Republic	England		War
5	Late 17th–early 18th centuries		France	Great Britain		War
6	Late 18th–early 19th centuries		United Kingdom	France		War
7	Mid-19th century		United Kingdom, France	Russia		War
8	19th century		France	Germany		War
9	Late 19th–early 20th centuries		Russia, China	Japan		War
10	Early 20th century		United Kingdom	United States		No war
11	Early 20th century		Russia, U.K., France	Germany		War
12	Mid-20th century		Soviet Union, U.K. France	Germany		War
13	Mid-20th century		United States	Japan		War
14	1970s–1980s		Soviet Union	Japan		No war
15	1940s–1980s		United States	Soviet Union		No war
16	1990s–present		United Kingdom, France	Germany		No war

[HARVARD BELFER CENTER FOR SCIENCE AND INTERNATIONAL AFFAIRS](#)

Source: Harvard Belfer Center for Science and International Affairs

The first video was taken on the USS Nimitz in 2004 but The New York Times published more videos in articles posted in May dating from 2015 and 2017.

Here is a section from a CNN report last week quoting Navy spokesperson Joe Gradisher.

Gradisher said the Navy's transparency about unidentified aerial phenomena, or UAP, is largely done to encourage trainees to report "incursions" they spot in the airfield, which threaten pilots' safety.

"This is all about frequent incursions into our training ranges by UAPs," he said. "Those incursions present a safety hazard to the safe flight of our aviators and the security of our operations."

The public clips capture just a fraction of the frequent incursions Navy training ranges see, he said.

I've bolded the last line above because it is obviously meant for publicity. Let's think about this for a moment. What are the vehicles being seen in these videos?

If they are drones, they are achieving incredible speed and manoeuvrability with no heat signature. That's not possible if we consider today's physics.

Anything moving that quickly becomes subject to thermodynamic heating and would require a propulsion unit putting out significant amounts of energy. Anything travelling that fast leaves a signature like a sonic boom but those have been



conspicuously absent from the reports.

That means they are achieving feats that are impossible based on our knowledge of physics today. As I write this, my mind is on fire with speculation about quantum entanglement and the theories expounded upon in *Cixin Liu's* novel *The Three-Body Problem* but that is all pointless because we have no proof.

So, who built them and who is piloting them? Nobody knows for sure.

It is tempting to think they are evidence of aliens but I have to admit that I am a big proponent of Ockham's razor: "The simplest solution is most likely the right one." If something is impossible, it is very unlikely to be true.

Either someone, and these craft only appear to have been seen by US pilots, has advanced technology that is so far ahead of what is possible today as to be unimaginable, or it is fake.

Former US Senator Harry Reid spearheaded the investigation into the sightings and had this to say:

"We don't have a lot explanation for what they are," he said. "They can go vertically, horizontally at huge air knots. If you have a jet airplane that goes 700 miles an hour – we've only got one going that fast – these things it's estimated are going 3,000 miles per hour. So try that one on."

It's that last figure that caught my attention. Are these hypersonic

The big challenge with developing engines to operate at such high speeds is heat management.

cruise missiles or some variant there of? That is the closest explanation I can come up with that has some basis in reality but it does not tackle the heat signature problem.

There is another explanation. We already know that the US is engaged in counter intelligence on a massive scale with the Star Wars programme and broke the USSR by fooling it into spending excessively on an impossible goal of first strike space-based weaponry.

I can't help but think a similar strategy is being deployed today in an attempt to keep China and Russia's geopolitical competition with the US under check. To me at least that seems like the simplest solution.

For all the reasons explained above we are already in an arms race and hypersonic solutions are going to be a big part of the future deployment plans for just about every country. That represents a significant escalation of geopolitical tension but it also represents a major investment opportunity.

The Saudi attack was audacious but the commercialisation of hypersonic technology means they are already obsolete.

This month's recommendation

The SR-71 Blackbird is a nearly 60-year-old piece of technology. It used a dual engine system where the jet engines would get the plane up to Mach 2 or 3, the air in-take valves of which would seal off and divert air to the scramjets which could bring it up to quicker speeds. Today, the commercialisation of that technology is moving into the wider sphere of technological advancement.

The big challenge with developing engines to operate at such high speeds is heat management. Aerodynamic heating can warp and bend steel so the challenge with hypersonic is coming up with a cost-effective way of managing that exposure. That's where **Meggitt** comes in.

The company is a mid-sized defence and aeronautics contractor but its market-leading specialisation is in heat management. The company's Power Gearbox and Slim-Line Nacelle double the heat load of jet engines.

Longer term, the increasing use of batteries and electric flight systems will require ten times the heat load of engines today. That's where the company is aiming to



get to. It represents the leading edge of technological innovation in heat management for aircraft engines.

The company achieves that leadership through a patchwork of specialisations in additive manufacturing, intelligent workbenches, machine connectivity, robotics, and digital work instructions. The precision engineering necessary to produce parts required for jet engines coupled with the requirement

manufacturing sector for a while but I have never made it one of my investment recommendations because the boom in the companies producing the machines peaked six years ago. Today, the investment opportunity resides in the intellectual property holders that are using the 3D printing technology to deploy their custom solutions.

It these inventors that will reap the rewards rather than the

where it can make money.

Among the sensors the company produces, it focuses on identifying bleed air leaks, detecting fire and monitoring the gas turbine temperature. In pressure measurement, the sensors monitor combustion control in both industrial and aero gas turbines. In strain management, the sensors manage landing gear strain and torque and are embedded in the axles.

Polymers and composites represented 18.7% of revenue which reflects how successfully the company has been deploying 3D printing. Aircraft braking systems represented 18.4% of revenue while the equipment group represented 11.3%.

Today, the investment opportunity resides in the intellectual property holders that are using the 3D printing technology to deploy their custom solutions.

for end-to-end traceability is one of the primary sectors where the company has a clear competitive advantage.

It is through 3D printing the metals and composite materials that the company has been able to achieve the innovative air-oil coolers, diffusion-bonded etched plate heat exchangers, plus advanced plate and fin hex heat exchangers it is now marketing.

The great benefit of additive manufacturing for aeronautical parts is the guaranteed even disposition of the material in building the part. There is a much-reduced risk or accidental brittleness in the metal because of improper tooling.

I've been following the additive

manufacturers of the machines which are quickly becoming commoditised. Meggitt fits that profile perfectly.

The company derived 27.7% of revenue from control systems in 2018, making the temperature control part of the business its largest money generator. Sensing Systems represented 24% of revenue. That is the other big part of the company's business.

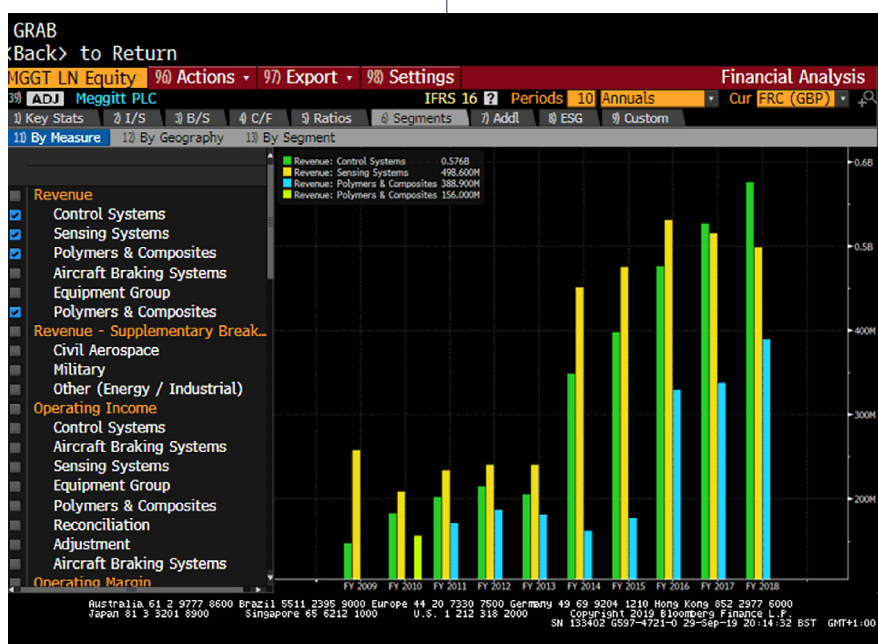
It is deploying Internet of Things technology to install sensors in every part of the engine so that there is real-time data on the temperature, pressure, strain and torque being experienced in-flight. This can be analysed to reduce down time, streamline maintenance and ensure the plane spends more time in the air

The graphic on page 9 highlights how the growth of control systems has been growing faster than just about any other part of the company over the last three years.

The reason the share price spent three years ranging before breaking on the upside in October is because it was in the teeth of a lengthy reorganisation to reorient the company towards its unique strengths in temperature management and next generation sensors.

North America accounts for 56.3% of revenue which is a reflection of the fact Boeing accounts for 5.13% of revenue, United Technologies 3.88%, Lockheed Martin 2.55%, Delta Airlines 2.17%, General Electric 1.7%, General Dynamics 1.65% and Raytheon 1.63%. Europe accounts for 20.2% of





Source: Bloomberg

revenue with Airbus being the largest customer at 6.85% of revenue and Deutsche Lufthansa at 1.82%.

This is a competitive industry not least because of the size of the potential prize but also because countries tend to drive investment and capital in creating a competitive advantage. However, it is important to highlight that Meggitt has been highly successful in developing customers in both the civil and defence sectors and has a strong geographical spread of customers.

The investment case is built on the continued trajectory of revenue growth which was 9% when the interim results were reported in August. Underlying profit increased 7% to £161 million on a 15% margin. Free cash flow increased 80% to £49 million.

The factory consolidation and expansion plan is ahead of schedule, which is helping to support the share price. That

allowed the company to increase the dividend by 5%. The success of growing its revenue and improving its free cash flow has resulted in analysts predicting its price/earnings ratio will halve from 34.03 to 17.98 by the end of this year.

Going forward, I believe Meggitt is uniquely placed to benefit from

the potential for exponential growth in the hypersonic engine sector. That either ensures the company will become a takeover candidate or it will become a much more significant component of the FTSE 100 in its own right.

My 12-month target is 800p but my three-year target is 1,200p as the market for hypersonic components explodes on the upside.

The risk with any contractor is the market moves in a different direction or a competitor arises that has a better product. I don't believe these are existential risks for the company but they are risks. **I recommend buying Meggitt up to 700p.**

All the best,

Eoin Treacy
Investment Director, *Frontier Tech Investor*

Action to take:

Ticker:

Price as of 01.10.19:

Buy up to:

Market cap:

52-week high/low:

Buy Meggitt PLC

MGGT:LN

634.40 GBp

700 GBp

£4.93 billion

646.60p/456.10p



Medical

Company	Ticker	Rec Date	Price Then	Price Now	Gain/loss %
Autodesk	ADSK	19/07/17	\$108.83	\$147.70	35.72%
Illumina	ILMN	05/09/17	\$207.22	\$304.22	46.81%
Becton Dickinson and Co	BDX	03/05/18	\$221.35	252.96	16.35%
Canopy Growth Corp	WEED :CN	21/03/18	C\$33.11	C\$30.35	-8.34%
Advanced Oncotherapy	AVO	03/07/18	48p	42.00p	-12.50%
Bioquell	BQE :LN	07/08/18	440p	587.00p	33.41%
Aurora Cannabis	ACB-T	19/09/18	C\$12.35	C\$5.82	-52.87%
Genus Plc	GNS :LN	02/07/19	£2682	2792.00p	4.10%

Technology

Company	Ticker	Rec Date	Price Then	Price Now	Gain/loss %
Garmin	GRMN US	02/08/16	\$55.75	\$84.69	64.16%
Cisco Systems Inc.	CSCO: US	03/04/17	\$33.80	\$49.41	55.59%
Microsoft	MSFT	31/07/17	\$73.04	\$139.03	95.70%
Northrup Grumman	NOC US	07/11/17	\$301.66	\$374.79	26.92%
Intel Corp	INTC	06/06/18	\$57.03	\$51.53	-6.93%
Activision Blizzard	ATVI: US	02/10/18	\$83.29	\$52.92	-36.46%
Tesla	TSLA	05/11/18	\$346.41	\$240.87	-30.47%
Science Apps Int	SAIC	07/07/16	\$58.20	\$87.35	57.22%
Alphabet	GOOG: US	04/12/18	\$1,093	\$1219.00	11.53%
Visa	V US	08/01/19	\$136.06	\$172.01	26.97%
ZUORA-A	ZUO	05/02/19	\$21.39	\$15.05	-29.64%
Avast PLC	AVST LN	02/04/19	285.20p	388.00p	42.05%
Meituan Dianping	3690 HK	03/09/19	HK\$73.55	HK\$79.65	8.29%
Meggitt PLC	MGGT: LN	02/10/19	634.40p	634.40p	

Energy

Company	Ticker	Rec Date	Price Then	Price Now	Gain/loss %
Ormat Technologies	ORA on NYSE	06/06/17	\$58.79	\$74.29	28.10%
Sherritt International Corp	S CN	06/02/18	C\$1.18	C\$0.29	-75.42%
Oxford Biomedica	OXB -L	05/03/19	669.00p	540.00p	-19.28%

Moonshot

Company	Ticker	Rec Date	Price Then	Price Now	Gain/loss %
SolarWindow	WNDW	07/04/16	\$3.96	\$2.72	-31.31%
Alkane Resources Ltd	ALK: AU	05/09/16	AU\$ 0.31	A\$0.73	139.34%
Superconductor Tech Inc	SCON	03/04/18	\$9.60	\$0.62	-93.50%

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

Risk warning

Your capital is at risk when you invest in shares – you can lose some or all of your money, so never risk more than you can afford to lose. Bid/offer spreads, commissions, fees and other charges can reduce returns from investments. The Frontier Tech Investor portfolio is not intended to represent the exact price at which you could buy or sell a share. Our reference price is the closing price the day before issue is published. Sometimes readers will achieve better entry/exit prices; sometimes worse. All gains are gross, and returns will be affected by dealing costs and taxes. Profits from share dealing are a form of capital gain and subject to taxation. Tax treatment depends on individual circumstances and may be subject to change in the future. The information and opinions expressed do not necessarily reflect the views of other editors/contributors of Southbank Investment Research Ltd. Small cap shares - Shares recommended may be small company shares. These can be relatively illiquid meaning they are hard to trade and can have a large bid/offer spread. If you need to sell soon after you bought, you might get back less than you paid. This makes them riskier than other investments. Small companies may not pay a dividend. Full details of our complaints procedure and terms & conditions can be found on our website southbankresearch.com Investment Director: Eoin Treacy. Frontier Tech Investor is issued by Southbank Investment Research Ltd. Registered in England and Wales No 9539630. VAT No GB629 7287 94. Registered Office: 2nd Floor, Crowne House, 56-58 Southwark Street, London, SE1 1UN. Southbank Investment Research Ltd is authorised and regulated by the Financial Conduct Authority. FCA No 706697. <https://register.fca.org.uk/>. ISSN 2398-2470. © 2019 Southbank Investment Research Ltd.