

12th November 2020

FRONTIER IP GROUP PLC (FIPP.LN)



Initiation of coverage

Marketing Communication (Connected Research)

Frontier IP Group plc

BBG Ticker: FIPP LN

Price: 67p/sh.

Mkt Cap: £37m

BUY

Year end June	Revenue (£m)	EBIT (£m)	PBT (£m)	EPS (£p)	NAV per share (p)	P/E	Share price/NAV per share
2018A	2.4	0.9	0.9	2.3	33.2	29.1	2.0
2019A	4.3	2.3	2.4	5.5	41.4	12.2	1.6
2020A	6.4	4.2	4.2	8.4	51.0	8.0	1.3

SOURCE: Company Data, VSA Capital Research.

Creating Value for Growth Technology Companies

Frontier IP Group ("Frontier IP") provides commercialisation services in return for equity in private technology companies. The Group's equity holdings are in four high growth technology clusters comprising: *artificial intelligence, robotics and big and sparse data; pathogens and cell imaging; food and agritech; and engineered particles and materials*. Frontier IP's early access to companies with leading-edge IP and the structural growth in the target clusters offers potential for strong upside. The year ending June 2020, saw Frontier IP's portfolio value increase by 47 percent to £19.4m.

Access to Leading Edge University IP

The Group has worked with Universities including Cambridge, Heriot-Watt Manchester, Plymouth, NOVA University Lisbon and the Portuguese Institute for Systems and Computer Engineering (INESC TEC). Frontier IP's relationships help to secure early access to leading edge IP, such as AI in drug discovery that has led to a 2.4 percent equity holding in Oxford based **Exscientia**. In May 2020, Exscientia raised £46m in a Series C round. Exscientia's AI is now deployed to help discover drugs for pharmaceutical majors including **Bayer, Bristol-Myers Squibb, GlaxoSmithKline, Roche and Sanofi**.

Strong Relationships with Industry Partners

Frontier IP works closely with Universities, Research Institutes and Academics to identify IP that can be commercialised. The Group then plays a main role in not only providing expertise and access to external funding but also commercialisation by taking a hands-on approach to commercial and technical development and by bringing in industry partners. This is key to increasing equity value. Industry partners include Bosch, whom Frontier introduced to portfolio companies Fieldwork Robotics and Pulsiv Solar.

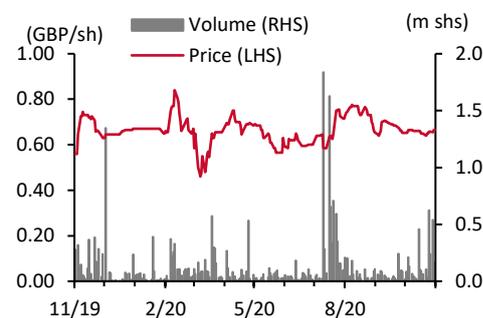
Recommendation

Of the 19 portfolio companies, a number are at a point of acceleration in commercial development, paving the way for a step up in valuation or a potential exit. Frontier IP has a proven record in commercialising University IP and increasing its EPS and NAV as portfolio company valuations rise. That success is seeing the Group invest in its own expansion for growth. We believe that Frontier IP represents an excellent opportunity for investors to gain exposure to early-stage technology companies, based on leading edge IP, which meets the needs and demands of international markets. **We initiate coverage with a Buy Recommendation.**

Group Description

IP commercialisation company.

One Year Price Performance



Price % chg.	1mn	3mn	12mn
	1.9%	-7.0%	18.8%
12mn high/low	46p/84p		

SOURCE: Eikon, as of 11 November 2020 close.

Market:	LSE AIM
Shares in issue	55.0m
Free float:	88.4%
Net cash (June 2020)	£3.0m
Enterprise value:	£34m

Major shareholders

Canaccord Genuity Wealth	15.9%
Quilter Cheviot	15.0%
AXA Investment Management	6.4%
Premier Asset Management	5.7%

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#VSA Capital acts as research provider to Frontier IP Group plc.

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Investment Case

A proven and different business model for driving value

The Group, incorporated in 2007 and quoted on AIM in 2011, set out on a new path for creating enterprise value from Intellectual Property (IP). The strategy would not be the traditional VC path of investing cash for equity and taking board seats. Instead, the principle would be to add value to IP and invention using its knowledge, skills and expertise to develop technology with high commercial potential. In return, the Group would earn equity stakes. The model, though different to VC, is nonetheless now proven, reflected in a rise in market capitalisation from £3.5m at IPO in 2011 to £37.0m today.

Market opportunity – the economic need for IP commercialisation

Frontier IP provides the bridge between IP creators and those who utilise IP for business. The IP creation market is very large, broad in technology scope and under commercialised. There is a huge amount of technology IP available for potential commercialisation. UK Universities invested £8.2bn in R&D during 2017 (most recent UK Government data) across 164 academic Institutions. Most of their work is highly rated, they are responsible for 15% of the in scientific papers published in the world's top scientific journals. The universities produce high quality research, yet only 23 percent of that research can be replicated by industry. UK industry wants the best ideas, itself investing £23.7bn in research and development annually. Frontier IP bridges academia and industry, working with Universities to commercialise their IP and build businesses, and partnering with industry to help it find the right IP. To cut through the significant volume of IP available, the Group focusses on the four clusters outlined above.

The business is scaling

Given success in developing the portfolio, the Group is now scaling its activities. During FY 2019 (year-end June) Matthew White, former Head of Innovation at **AB Sugar**, joined as Chief Commercialisation Officer with a seat on the board, and Alex Pugh also joined as analyst. Since then, Frontier IP has made four further key recruits across its technology clusters.

Significant upside if successful – the potential for exits

Funding is typically raised for portfolio companies from third parties once important commercial and technical milestones are achieved. This financing is to fund future development and progress to an exit. Shareholder value is therefore driven by the potential for realisations on exit, with the value of the portfolio representing potential deferred earnings. Frontier IP Group as yet has not yet made an exit. However, an exit at a premium to portfolio valuation, can be a real opportunity for investor upside. Within its portfolio of 19 equity holdings, the Group has a number of companies at inflection points and so moving ever closer to potential exits.

Valuation

AI drug discovery technology company Exscientia, which has raised £100m in the last two years and has announced deals with (substantially) in excess of £500m of access and milestone payments through partnerships with the global pharmaceutical companies, has the potential to achieve a \$1bn valuation. This would see Frontier's stake worth £18.5m. Frontier IP has a 26.7 percent equity holding in Cambridge based Fieldwork Robotics' advanced soft fruit and vegetable harvesting robot technology, addressing the needs of global food producers seeking to improve productivity through greater automation. There have already been acquisitions in the space and interest is growing: John Deere has bought Blue River Technology, a company developing robots to precisely spray herbicides and pesticides for \$305m. More recently, ADM Capital's Cibus fund bought an 11.7 percent stake in Norwegian agricultural robotics firm Saga Robotics, hailing a future "revolution" in agricultural robotics. Pulsiv's energy saving power conversion technology has significant markets in consumer electronics and solar production. Frontier IP has an 18.9 percent stake. Although Frontier IP has yet to have an exit to crystallise cash value, and the timing and value of potential exits is hard to assess, given the number of companies in the Frontier IP portfolio now at inflection points, this is becoming a real possibility over the next twelve months. As a result, we believe that the shares offer distinct valuation upside potential.

Background

Frontier IP is a specialist in the field of Intellectual Property Commercialisation (IPC).

In May 2009, **Sigma Capital Group**, an AIM listed finance, property and urban regeneration specialist, listed its university IP commercialisation subsidiary Frontier IP Ltd on UK based PLUS market by way of a reverse takeover of quoted investment company ARH Leisure Investments. The combined business, based in Edinburgh, commenced trading as **Frontier IP Group PLC** with Neil Crabb as Executive Chairman. Neil Crabb was a co-founder of Sigma Capital Group. In January 2011, the Group moved from the PLUS market to list its shares on the London Stock Exchange AIM market at a share price of 50p, raising £1.0m – resulting in a post listing market capitalisation of £3.5m.

The Group today has offices in Cambridge and London with 15 full time staff.

Strategy

The Group set out to create value by uniting science, industry and finance to build businesses based on outstanding research. The Group's approach is both innovative and capital efficient. It is based on proving the commercial worth of intellectual property, working closely in partnership with universities, academics and industrial partners; Frontier IP earns its equity in portfolio companies in return for providing IP commercialisation and support services. These range from ensuring the business mechanics run smoothly, direct, hands-on support for technology development to developing industrial partnerships. **This approach has seen the valuation rise from £3.5m on IPO to £37m today.**

The strategy is based on proving the commercial value of IP before significant financial commitment and the Group does this through 5 distinct steps:

1. **Identifying and evaluating strong IP that can be commercialised.** The IP is generated by academics, universities and other partners;
2. **Taking material equity stakes in return for commercialisation services** and proactive, hands-on support – not for cash;
3. **Driving industry engagement to prove that the technology works**, can be scaled up, and meets the demands or needs of real-world customers;
4. **Raising third-party funds** for further development **once milestones achieved**; and
5. Generating value through **potential deferred earnings** that crystallise on realisation.

Technology Focus

The technology sector has enormous breadth. Frontier IP focusses its resources on specific segments. This not only helps to maximise returns, but also helps Frontier IP establish a reputation for expertise and adding value in specific areas of technology. This attracts technology IP producers, be they academic institutions or technology companies, to the Group.

The Group focusses on four technology clusters:

Frontier IP Group Technology Focus Clusters

 AI, big data, sparse data, robotics	 Food and Agritech	 Pathogens and cell imaging	 Engineered Particles & Materials
<ul style="list-style-type: none"> • Data Generation • High-Speed Data Throughput & Analysis • Machine Learning/Visualisation • Mimicking Humans 	<ul style="list-style-type: none"> • Animal & Plant Health • Automation • Processing & Process Control 	<ul style="list-style-type: none"> • Rapid Customisation • Simpler Detection Methods • Quicker Diagnostics 	<ul style="list-style-type: none"> • Novel Materials • Porous Materials • Scale Up • Novel Processing

SOURCE: Frontier IP Group, VSA Capital Research.

The four technology clusters encompass areas of technology that not only have thriving IP development but also scope for rapid commercial growth – perfect for Frontier IP to be able to add value over time. The Group’s approach means that:

- It only engages in areas where it has domain expertise.
- It is interested in *core technologies* with wide reaching application across different market sectors.

The Group’s ability to select IP that could have commercial potential and to work in partnership with clients to achieve growth for equity, has seen the business perform impressively. In FY 2018 the value of Frontier IPs’ existing equity stakes increased by 34 percent to £9.0m, in FY 2019 by 47 percent to £13.3m and in FY 2020 by 47 percent to £19.4m - the Group’s board has a proven track record.

Board of Directors

Neil Crabb Chief Executive Officer

Neil co-founded Sigma Capital Group plc and has considerable experience as an investor and director of a wide range of technology and university spin out companies. He was previously an investment manager at **Duncan Lawrie Ltd.** with responsibility for a range of managed portfolios investing in smaller UK companies and unquoted technology companies, prior to which he spent four years with **Equitable Life Assurance Soc.**, latterly as investment analyst managing investments in UK small companies and larger stocks in the electronics sector. Neil is an approved person under FSMA.

Jackie McKay Chief Operating Officer

Jackie is the Group's Chief Operating Officer, supporting the Chief Executive in the delivery of the Group's objectives. She has substantial experience of the university IP and venture capital industries and has been working with Frontier IP since its inception to help develop new and existing commercialisation relationships. Jackie spent nearly ten years at **Sigma Capital Group plc**, latterly as Corporate Development Director, where she was responsible for structuring and setting up venture funds and university partnerships. Prior to Sigma, Jackie spent 12 years with Bank of Scotland. She has an MA in Psychology.

Jim Fish Chief Financial Officer

Jim has over 25 years' experience in senior financial positions and a wide range of commercial experience including venture capital funded small/medium-sized enterprises and start-up companies. He was interim Finance Director at **The One Place Capital Limited**, an online technology start-up. He qualified as a chartered accountant with KPMG and holds a degree in Accounting and Finance from Heriot-Watt University, Edinburgh.

Matthew White Chief Commercial Officer

Matthew has over 23 years' experience in technology, product and service innovation, business development and marketing. In his previous role he was Head of Innovation, **AB Sugar**, part of FTSE 100 group AB Foods. He also has extensive experience working with university partners. He has an MA in Natural Sciences from Cambridge University.

Andrew Richmond Non-Executive Chairman

Andrew has substantial experience of the healthcare, stockbroking and private equity industries. He is Chairman of **Hub North Scotland**, a Lay Member of the Court of the University of Dundee and a Non-Executive Director of Scotland's Charity **Air Ambulance**.

Campbell Wilson Non-Executive Director

Campbell, who is past Chairman and currently a member of the Board of the **UK Pharmaceutical Licensing Group**, has worked in the UK pharmaceutical industry for approximately 35 years. The last 17 years of his career were in business development at **AstraZeneca**, the global research-based biopharmaceutical company, latterly as Executive Business Development Director within the company's central Business Development function. He led strategic collaboration and licensing activities at the unit, driving multiple technology and oncology therapy area collaborations and product licensing deals. Before his involvement in business development, Campbell worked in senior level scientific roles in cardiovascular drug discovery at AstraZeneca, and earlier at **Beecham Pharmaceuticals (now GSK)**.

Mike Bourne Non-Executive Director

Mike has almost 30 years' experience in investment management and particular expertise in technology, life sciences and clean technology. He is currently Partner of **Accretion Capital LLP** and a Director of **Cygnus Negra Limited**, **Cygnus Negra Malta Limited** and **Cloudfind Limited**. He is also an Advisory Board Member of **V2R**, the US technology transfer venture company. Prior to these roles, in 1995, he founded asset management company, **Rebourne Technology Investment Management Limited**, where he was also Chief Investment Officer. For nine years until 2009, he was also a member of the techMARK Advisory Committee.

Business Opportunity – under exploited research

Valuable technology IP needs to be sourced and most is generated through academic research and industrial Research and Development (R&D). The Group’s opportunity is from research that has not been commercially utilised and monetised. Frontier IP’s focus to date has been on IP generated by Universities and research institutions.

Universities are the largest available source of IP. However, a University’s mission is to teach and research. Frontier IP helps academia overcome a number of challenges faced in fully utilising the research pool and in defining those technologies capable of commercialisation. Challenges facing Universities include:

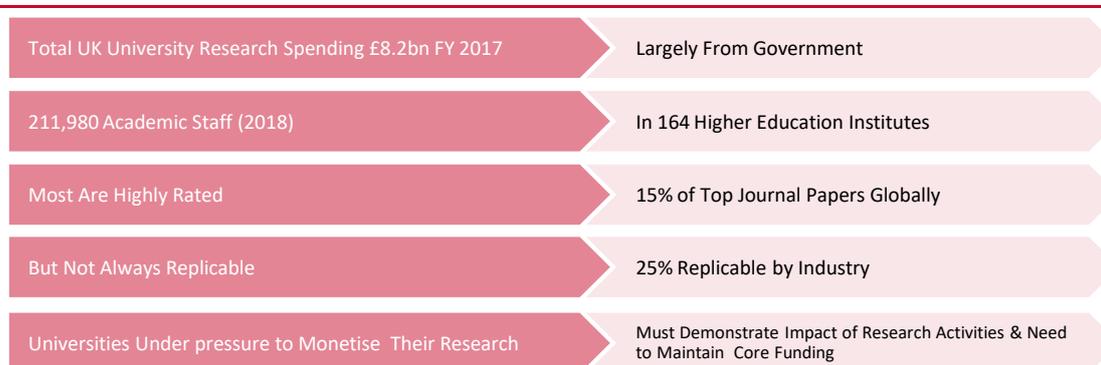
- Academics not having the required commercial skills.
- Academics needing to make extra time and effort to disclose their inventions and provide support to the licensing personnel, patent lawyers, and licensees in the evaluation, development, and patenting of the new technology.
- Basic academic research suffering as applied research tends to be more easily licensed for immediate commercial use. The university researcher’s traditional role to disseminate new knowledge by publication might be subordinated to the patenting process.
- Maintaining secrecy for commercial competitive advantage could impact on a University’s ability to openly publish its research for wider academic purpose.

However, Universities are under a degree of pressure to bring in income from their research. Given the stress on Government budgets as a result of COVID-19, this pressure could increase. Additionally, the weakened relationship between the UK and China over 5G and Huawei, coupled with Brexit and UK Universities recently falling in global rankings, could reduce income from overseas students being attracted to UK universities.

Innovation is increasingly critical for competitiveness in many industries and yet only an estimated 25 percent of University IP is further developed by industry (source: Frontier IP). University inventions are typically early stage and nowhere near commercial development.

Data on UK University R&D spend is sourced from UK Government. Their most recent information available dates from 2017. The illustration below, from Frontier IP, outlines this data and highlights the under- utilisation of IP:

The Opportunity



SOURCE: Frontier IP Group, VSA Capital Research.

Universities do not often have depth of commercial relationships required to significantly monetise IP nor the focus to do so, given the mission to teach and undertake pure research. Yet the ecosystem of potential industry partners is large:

- 6,000 companies globally each have turnover of more than \$1bn and account for 65 percent of global corporate pre-tax earnings.
- UK industry invested £23.7bn on R&D in 2017 – the best ideas are sought.

Frontier IP provides the bridge between IP creators and those who utilise IP for business.

Access to IP and leading-edge technology

Frontier IP has developed, and continues to develop, strong relationships with universities, academics, industry and other organisations to source, identify and evaluate IP. The Group bases its approach on using its competence to have influence, particularly in working closely with academia and research institutions.

Frontier IP does not take the approach of sifting through hundreds of technology opportunities to find that small percent that may have the least problems. The Group is instead seeking technology IP that that can be repeated, addresses real world problems and scaled as a product. Frontier IP provides advice on development, scaling and corporate finance. The Group also seeks external capital and works with companies to deploy it efficiently to build their businesses.

Frontier IP Technology Sources

Portfolio Company	About	Source
Alusid Limited	Recycled materials	University of Central Lancashire
Amprologix Limited	Novel antibiotics to tackle antimicrobial resistance	Universities of Plymouth & Manchester
AqualnSilico	Software to optimise wastewater treatment	FCT NOVA
Cambridge Raman Imaging Limited	Medical imaging using ultra-fast lasers	University of Cambridge & Politecnico di Milano
Cambridge Simulation Solutions Limited	Methods to simulate and control complex chemical processes	University of Cambridge
CamGraPhIC Limited	Graphene-based photonics	University of Cambridge & CNIT
Celerum Limited	Near real-time automated fleet scheduling	Robert Gordon University
Des Solutio Lda	Green alternatives to industrial toxic solvents	FCT NOVA
Elute Intelligence	Software tools to intelligently search, compare and analyse documents	Incorporated from an existing business CFL Software with additional Frontier IP intellectual property
Exscientia Limited	Novel informatics and experimental methods for drug discovery	University of Dundee
Fieldwork Robotics Limited	Robotic harvesting technology for challenging horticultural applications	University of Plymouth
Insignals Neurotech Lda	Wearable medical devices supporting deep brain surgery	INESC TEC
Molendotech Limited	Rapid detection of water borne bacteria	University of Plymouth
Nandi Proteins Limited	Food protein technology	Heriot-Watt University
NTPE LDA	Printed electronic circuits, sensors and semiconductors	FCT NOVA
PoreXpert Limited	Analysis and modelling of porous materials	University of Plymouth
PulsiV Solar Limited	High efficiency power conversion and solar power generation	University of Plymouth
Tarsis Technology Limited	Controlled delivery of agrochemicals using metal organic frameworks	University of Cambridge
The Vaccine Group Limited	Herpesvirus-based vaccines for the control of bacterial and viral diseases	University of Plymouth

SOURCE: Frontier IP Group, VSA Capital Research.

The Group, with a main base in Cambridge, where it has a number of spin outs, has built a significant portfolio in the UK and more recently Portugal.

Business Model

The business model is innovative and stands the Group apart from Venture Capital funds - Frontier IP is paid by the spin out companies for the commercialisation services that it provides to them in equity (or through a share of the licensing income), with the payment for services shown in the Frontier IP P&L account as services revenue.

The business is capital light - the Group does not invest cash for its equity stakes it earns them.

The Group provide a range of services that results in equity stakes including:

- Gauging market needs and demands;
- Identifying IP that can actually be commercialised guided by industry partners;
- Business development;
- Identifying industry partners;
- Providing corporate and strategic advice
- Fundraising; and
- Addressing scaling challenges.

Although Frontier IP is not a fund manager or venture capitalist, the Group works with a wide range of funding sources to support its portfolio companies. The Group may from time to time may commit its own capital in an efficient manner to accelerate technology and business.

Percentage Held in Each Portfolio Company as of June 30th, 2020

Portfolio Company	% Share Capital
Alusid Limited	35.6%
Amprologix Limited	10.0%
AqualSilico Lda	29.0%
Cambridge Raman Imaging Limited	30.9%
Cambridge Simulation Solutions Limited	40.0%
CamGraPhIC Limited	33.3%
Celerum Limited	33.8%
Des Solutio LDA	25.0%
Elute Intelligence Holdings	46.5%
Exscientia Limited	2.4%
Fieldwork Robotics Limited	26.7%
Insignals Neurotech Lda	33.0%
Molendotech Limited	12.6%
Nandi Proteins Limited	20.1%
NTPE LDA	31.6%
PoreXpert Limited	15.0%
PulsiV Solar Limited	18.9%
Tarsis Technology Limited	18.0%
The Vaccine Group Limited	17.0%

SOURCE: Frontier IP Group, VSA Capital Research.

Given that the Group is working with partners to identify IP that can be commercialised and helping them to do so, the companies that it becomes involved with tend to be early stage. This means that Frontier IP is often able to secure a double-digit percentage equity stake as illustrated in the table above:

Exscientia has been an exception with a smaller stake held. However, as we will see, this is of high value.

Partnership approach – a differentiated strategy

Markets are competitive, with a variety of sources seeking to gain access to equity in earlier stage, high growth potential, technology companies. Frontier IP has to be seen as an attractive partner for the creators of growth technologies.

In 2019 UK Venture Capital (VC) funds directly invested £10.1bn into UK technology companies – an increase of 44 percent during the year despite Brexit. This highlights the scale of investment seeking equity in UK technology companies. Frontier IP therefore has to have a strong and differentiated strategy:

- The Group seeks to see equity split fairly (same class of shares) between shareholders. Frontier IP act as co-founder alongside the Academics and University with collective decision processes.
- Typically, funding is raised only once milestones or validation have been achieved.
- Interests are aligned – this making for more conducive relationships, particularly with the academic community.

The Portfolio

Frontier IP Group’s portfolio has grown to 19 equity holdings across the four technology clusters:

Portfolio Classified by Technology and Industry Needs

 AI, big data, sparse data, robotics	 Food and Agritech	 Pathogens and cell imaging	 Engineered Particles & Materials
<ul style="list-style-type: none"> • Data Generation • High-Speed Data Throughput & Analysis • Machine Learning/Visualisation • Mimicking Humans 	<ul style="list-style-type: none"> • Animal & Plant Health • Automation • Processing & Process Control 	<ul style="list-style-type: none"> •Rapid Customisation •Simpler Detection Methods •Quicker Diagnostics 	<ul style="list-style-type: none"> • Novel Materials • Porous Materials • Scale Up • Novel Processing
 <p>Exscientia DRIVEN BY KNOWLEDGE</p> <p>POREXPERT Purifying & Analysing</p> <p>elute INTELLIGENCE</p> <p>PulsiV Fieldwork Robotics Ltd</p> <p>celerum</p> <p>TVG THE VACCINE GROUP</p> <p>CRIL</p>	 <p>MolEndoTech</p> <p>NANDI potatoes</p> <p>Fieldwork Robotics Ltd</p> <p>TVG THE VACCINE GROUP</p> <p>Des Solutio</p> <p>Tarsis Technology</p>	 <p>MolEndoTech</p> <p>TVG THE VACCINE GROUP</p> <p>Amprologix Antimicrobial Processing & Hygiene</p> <p>CRIL</p> <p>insignals neurotech</p>	 <p>ALUSID SUSTAINABLE SURFACES</p> <p>NANDI potatoes</p> <p>POREXPERT Purifying & Analysing</p> <p>Tarsis Technology</p> <p>CRIL</p> <p>CamGraPhIC</p> <p>NTPE Nova Tech Paper-E</p> <p>11</p>

SOURCE: Frontier IP Group, VSA Capital Research.

Examples Within the Technology Clusters

We have set out below individual examples, within each of the four technology clusters, that not only to illustrate the quality of technologies that the Group works with but also the progress that companies have made since Frontier IP became involved.



Exscientia
DRIVEN BY KNOWLEDGE



2.4% Shareholding

Value: [Not disclosed](#)
Last raise: £46m
Date: May 2020

www.exscientia.co.uk

Artificial Intelligence based drug discovery – accelerating global drug development

Exscientia is a Dundee University spin out, founded in 2012 and led by CEO Professor Andrew Hopkins, an academic and former Pfizer executive.

The process of new drug development requires significant investment and can have low chance of success. In a March 2020, a report co-authored by the London School of Hygiene & Tropical Medicine and KU Leuven, led by the London School of Economics, estimated that the median cost of bringing a new drug to market was \$985 million, and the average cost was \$1.3bn. The researchers found that the cost of developing drugs varied across different disease areas, with cancer drugs being the most expensive.

In a June 2019 PLG Journal article titled “Licencing and the Pharmaceutical R&D Crisis” Neil Crabb, the CEO of Frontier IP, noted that, “only one in ten of the drugs entering phase 1 of clinical trials eventually arrive on the market, and over the past decade the forecast peak sales have plummeted. Financial returns have collapsed accordingly. Their returns from R&D have tumbled from 10.1 percent to 1.9 percent, while those for smaller companies returns dropped from 17.4 percent to 9.3 percent – well below their cost of capital”.

Exscientia, is a world leader in AI-driven drug discovery. It aims to improve research productivity and cut costs through automating the process of identifying drug candidates with a much greater chance of success. It was involved in the first AI-created drug to enter human clinical trials in partnership with Sumitomo Dainippon Pharma.

Technology

At the start of a drug discovery project, scientists devise a strategy for designing a new drug candidate. There is an incredible diversity of candidates to target and the company uses AI to narrow down the search more quickly than humans can. The process of finding a new drug against a chosen target for a particular disease usually involves high-throughput screening (HTS), wherein large libraries of chemicals are tested for their ability to modify the target.

The company’s Centaur Chemist™ platform the uses active learning to apply the strategy set out by the scientist and determine which experiments produce the most meaningful information about each drug candidate. The rules of drug discovery are very complex - not all are known, and some are not readily describable as a finite set of moves. Exscientia therefore notes that it is very challenging to devise a pure machine process for drug discovery. Its platform takes an iterative approach, using learnings from initial steps and applying rules to reduce the number of potential candidates with each cycle. This encoded knowledge helps the system become more efficient.

By decreasing the number of compounds analysed per drug by hundreds, Exscientia can dramatically reduce the time and cost of discovering and developing new medicines.

Business Model

The Exscientia business model has two core elements:

- Contract research whereby the company receives milestone and royalty payments.
- Own developed proprietary drug portfolio.

Commercial partners

Exscientia was the first company globally to enter a drug candidate created using AI for clinical trials.

The company is attracting significant commercial interest and is working with leading pharmaceutical companies across the globe including Bayer, Bristol-Myers Squibb, Celgene, Evotec, GlaxoSmithKline, Roche, Sanofi and Sumitomo.

Commercial progress and financing

Exscientia today has offices in Oxford and Dundee UK, Japan and the U.S. The company employs 64 staff and is expanding rapidly. This has required financing and the company has attracted significant commercial interest and capital.

- May 2017 – announces an agreement with Sanofi to discover and develop new molecules which work at two distinct sites in the body at the same time, called bispecific molecules, in the area of metabolic diseases, such as diabetes. The agreement involves contribution to research funding of up to £227.0m in milestone payments and payment royalties on any drugs that make it through to market.
- July 2017 – secures an agreement with GlaxoSmithKline plc for up to £33.0m to design up to 10 preclinical candidates against targets nominated by GlaxoSmithKline plc.
- January 2019 – signs a collaboration agreement worth up to £56.3m with Roche.
- March 2019 – secures a three-year agreement worth £19.4m with Celgene, now part of Bristol-Myers Squibb.
- December 2018 raises £20.2m in a Series B fund raise.
- May 2020 raises £46.0m in a series C fund raise.

Industry investors today include Bristol-Myers Squibb, Evotec, GT Healthcare Capital and Novo Holdings.

We understand from Frontier IP that Exscientia has increased its valuation for each funding round it has enjoyed to date. We are not surprised given Exscientia's significant progress. Companies such as Exscientia are highly prized by investors. A measure of investor appetite can be gauged by the success of Schrödinger, which floated in February 2020 raising \$232 million at \$17 a share. Shares are now above \$50 a share, giving the company a valuation of nearly \$3.5bn.

Frontier IP contribution

Exscientia is proving to be a major global success as a UK university spin out. The commercial deals announced by Exscientia, with leading industry partners, is validation of the technology and are a route to delivering substantial value. The company has upfront and potential milestone payments and royalties worth more than £500m.

That Frontier IP, through its early work with Dundee University on commercialisation and strategy, now holds such a valuable equity stake, is real validation of the Frontier IP business model.



20% Shareholding

Value: £11m
Last raise: £1m
Grants: £0.9m
www.nandiprotiens.com

Develops protein-based functional ingredients for the food industry - to replace gluten, fat and chemical E-numbers in processed food.

Nandi Proteins is spin out from Heriot-Watt University, Edinburgh and commercialises the work of Dr Lydia Campbell and her team.

Consumer attitudes to food are changing and consumers are seeking less e-numbers, additives and increasingly looking for natural ingredients. There is a growing emphasis on protein and particularly plant-based proteins. Nandi's expertise directly addresses these opportunities.

Gluten intolerance is a major health issue impacting 1 in 100 globally. In the UK alone, Coeliac disease, caused by gluten intolerance affects at least 1 in every 100 people in the UK. The condition is hereditary (source: UK national charity Coeliac UK (www.coeliac.org.uk)). 500,000 people in the UK are living with undiagnosed coeliac disease. People have to wait on average 13 years from first symptoms to diagnosis. The disease is named "celiac" in the U.S. and the U.S. based not for profit Celiac Disease Foundation notes that the condition can lead to two times the risk of coronary artery disease and four times the risk of small bowel cancers.

Gluten replacements are challenging to find. Many industrial gluten-free bread formulations use additives such as xanthan gum to improve structure and this, according to Nandi Proteins, can result in loaves with poor taste, inferior texture and lower protein content.

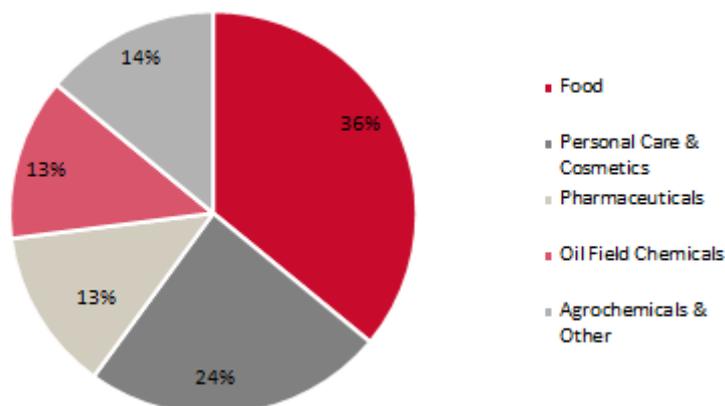
Nandi Proteins is partnering with AB Mauri, the ingredients division of AB Foods, and Agrii, part of Origin Enterprises, leading a project to create ingredients based on the proteins found in fava beans, oats and rapeseed by-products to deliver gluten free products. The project has been backed by grant funding from Coeliac UK and Innovate UK. Globally, the gluten free market \$17.6bn in 2018 growing at a CAGR of 9.1 percent (source: Grand View Research). Bakery estimated to account for >50 percent of the volume (~230,000 tonnes).

Fat replacement - health issues associated with meat eating are a major concern. According to World Health Organisation (WHO) data, obesity has tripled since 1975 and by 2016 more than 1.9bn adults, 18 years and older, were overweight. Of these over 650m were obese. Lower fat content meats and meat alternatives are seeing demand grow.

Nandi Proteins and Herriot-Watt studied the chemical structure of collagen proteins and how they behaved during heating and were able to develop modified collagen proteins that could closely mimic the properties of fat and so act as a fat replacement. The company's first focus market is a fat replacer to enable the production of low-fat sausages. Over 15.8m tonnes (9.7m tonnes in edible casings) of sausages are sold annually in a market worth £43bn.

Emulsifier replacement – the company is developing whey derived emulsifier replacements. An emulsion is a mixture of two liquids that are normally un-mixable such as water and oil. An emulsifier enables the mix to happen. The range of industries using emulsifiers is broad as can be seen from the chart overleaf. The food industry is a large user of emulsifiers and the overall global emulsifier market is large and growing – worth \$3.2bn in 2017 and forecast to grow at 6.3 per cent CAGR to \$5.2bn by 2025 (source: Fior Markets).

Markets for Emulsifiers



SOURCE: Nandi Proteins, VSA Capital Research.

Technology

Proteins are large size molecules (macromolecules) formed by amino acids and 20 different amino acids exist in proteins. Amino acids are combinations of carbon and hydrogen atoms. A protein is made up of hundreds of thousands of amino acids attached in long chains. Proteins perform critical functions in the human body including:

- Body growth and tissue maintenance;
- In the form of enzymes aiding biochemical reactions to help with, for instance, digestion;
- In the form of hormones acting as chemical “messenger” between cells, tissues and organs; and
- Providing cell structure and rigidity.

The company takes existing protein sources such as whey protein, collagen or rice protein and carries out a controlled *denaturation* via the application of heat – this changes the functional nature of the proteins. Nandi's patented technology is based on the knowledge that the functional properties of proteins change when they unfold (denature). Controlled denaturation can be used to deliberately change and control the protein functionality as an ingredient. The Company is focused on two protein types:

1. Globular proteins, where the molecules are folded into a spherical shape, found in vegetables and dairy; and
2. Spiral proteins, where long chains of molecules form spirals or helices. They are found in meat.

In both cases, chemical bonds along the length of, and between different portions of, the protein molecule keep the proteins in their shapes. Applying heat breaks the weak bonds allowing the proteins to unfold. The structure of the protein that was previously 'inside' the folded protein is now exposed. This allows it to interact with its surroundings -- for example by binding onto water molecules -- enhancing functionality such as solubility and emulsifying ability.

The unfolded structure also allows for new chemical bonds to form between one protein to another. The result is that individual protein molecules can become joined together to create a network which will change functional properties such as thickening and gelation abilities.

Denaturation processes are already widely used in food ingredient processing and cooking. For example, an egg white consists of globular proteins suspended in water. When you fry the egg, the proteins unfold and create a mesh, which traps the water molecules. The egg white solidifies. The challenge is in controlling the process precisely. Cook the egg for too long, too many protein bonds form, the net's mesh becomes too tight, and the white becomes rubbery. By controlling the heat applied and monitoring the unfolding process precisely, Nandi can create protein functionality that allows it to replace the functionality of fat and additive molecules such as emulsifiers.

Nandi is capable of producing modified proteins from both globular proteins (present in a wide range of naturally occurring foodstuffs, including whey, potato, soy and peas, as well as eggs) and the spiral proteins present in meat. We understand that Nandi is specifically exploring the modification of collagen proteins.

Nandi achieves control of the unfolding process by using chemistry and light-based systems to measure in real time a range of key variables as heat is applied to proteins in solution. This allows the Company to maximise their functional properties, such as emulsification, solubility, acid stability, foaming, water binding and gelation.

The company's technology includes proprietary sensor systems which can be used across existing manufacturing processes to control the variables and create functional proteins.

The company does not use any harsh or artificial chemicals to modify the proteins and produce its ingredients.

Business Model

Nandi Proteins intend to supply food producers with protein-based functional ingredients to reduce levels of fat, additives and gluten. The company will derive revenue from royalties that will be agreed at a fixed percentage level of end customer product sales.

Commercial progress and financing

Having developed its technology over a number of years, Nandi Proteins is now at commercialisation stage - this initially in the UK. The company has already attracted major partners:

2016 - Nandi Proteins signed a collaboration agreement with UK quoted companies Devro plc (DVO LN) and Kerry Group plc (KYGA LN) for a 3-year, £1.0m Innovate UK project to develop fat replacers for processed meat products. Devro is one of the world's leading suppliers of collagen casings for food, selling in over 100 countries.

July 2017 - Frontier IP assisted the company in a fundraising of approximately £1m to support future development.

January 2019 - the company won funding from Coeliac UK and Innovate UK to develop gluten replacements for use in bread from fava beans, oats and rapeseed by-products. Coeliac UK and Innovate UK are supporting the £250,000 project with a £180,697 grant as part of a strategy to encourage manufacturers to extend their gluten-free product ranges.

Consortium members include two food companies, gluten-free specialist Genius Foods and global ingredients business AB Mauri, part of FTSE 100 group AB Foods, and a major UK agronomy firm Agrii, a subsidiary of agri-services group Origin Enterprises.

- Heriot-Watt University, Edinburgh, will provide food science research facilities.
- Nandi will use its patented processing technology to create protein concentrates from natural raw materials supplied by Agrii.
- These materials include fava beans, a naked oat variety with a high protein content and rapeseed press cake (the residual seed material left once oil has been extracted) currently used as animal feed.
- A major gluten producer and AB Mauri will then test the ingredients, adapt their bread formulations, and assess commercial feasibility.

Post Full Year to June 30th, 2020 end, Nandi Proteins raised £0.72m via a convertible loan, including a £0.36m investment from the UK government's Future Fund, matched by Frontier IP and Shackleton Finance Limited.

Frontier IP contribution

- Working with a small number of major food and ingredient companies, including AB Foods, Devro and Kerry;
- Supporting fundraising;
- Providing support for technology development; and
- Handling negotiations with major food group.



17% Shareholding

Value: £17.6m
Grants: Party to £8.9m
UK, US and Chinese
funding

www.thevaccinigroup.co.uk

The Vaccine Group (TVG) – accelerating vaccine development

TVG is developing novel vaccine technologies to combat a wide range of diseases, including those which jump from species to species and into humans. TVG is a Plymouth University School of Biomedical Sciences spinout. Dr Michael Jarvis, Associate Professor (Reader) in Virology and Immunology at the University of Plymouth, is TVG's Founder and Chief Scientific Officer.

Zoonotic diseases a global risk to humanity

Zoonoses are defined as those diseases and infections naturally transmitted between people and animals. Diseases have emerged from fruit bats, non-human primates, rats, pigs and poultry. It is estimated that, globally, about one billion cases of illness and millions of deaths occur every year from zoonoses. Some 60 percent of emerging infectious diseases that are reported globally are zoonoses (source: The World Health Organisation).

COVID-19 is a zoonosis as are bird and swine flus, Ebola, AIDS, SARS, Lassa fever, Marburg, Rabies and Middle East Respiratory Syndrome (MERS-CoV).

Social and environmental factors mean increased risk of disease spreading rapidly worldwide: global mobility, population growth, urbanisation, destruction of animal habitat and globalisation of food supply chains.

Vaccine development needs to accelerate

TVG note that It is much quicker to develop a vaccine for animals (typically 3-5 years) than humans (typically up to 15 years). The regulatory hurdles are lower for animal vaccines. It is possible to test efficacy in the target animal quickly and also to carry out challenge studies where a vaccinated animal is deliberately infected with the pathogen (a microorganism that causes, or can cause, disease).

With the ability to test animal vaccines in their intended host, and the relative speed at which animal compared to human vaccines are approved for use, **direct vaccination of animals rather humans** is, according to TVG, is becoming accepted as an approach to protect humans against some emerging zoonotic pathogens.

Technology

The company is developing vaccines based on benign forms of herpesviruses, a group of viruses found in all animals and in humans. Herpesviruses have a number of useful properties:

- The herpesviruses can be engineered to express proteins such as the antigens (any substance that causes the immune system to produce antibodies). Therefore, **TVG uses the herpesviruses as a 'delivery vehicle' for antigens of interest.**
- The TVG process of 'engineering' the virus is (in vaccine development timescales), according to the company, very rapid.
- The vaccines are created by inserting a non-infectious region of DNA from the **pathogen** being targeted into the herpesvirus. This vaccine then stimulates an immune response against the disease when delivered into animals.
- The herpesviruses, TVG note, can also be used to stimulate both an antibody and a T-cell immune response. The different immune responses affect how a virus is eliminated by the vaccinated animal. TVG is able to tune which immune response is favoured. This is important as different pathogens respond differently to the two immune response approaches.

Business Model

TVG's focus is on developing vaccines using the herpesvirus delivery platforms that it creates. The company does not intend to become a vaccine producer and will license the individual vaccines to existing vaccine producers to manufacture and take to market.

Commercial milestones and financing

January 2019 - won a £0.4m grant as part of a £1.46m Anglo-Chinese project to combat an emerging antibiotic-resistant disease able to jump from pigs to humans with potentially fatal effect.

February 2019 - awarded up to £7.4m by the US government's Defence Advanced Research Project Agency (the "Agency" or "DARPA"). The aim of the three-and-a-half-year project, part of DARPA's PREventing EMerging Pathogenic Threats (PREEMPT) program, is to combine bioscience and disease modelling to predict the prevalence of zoonotic disease carriers and then prevent them from spilling over into humans by vaccinating the animal source of the zoonosis.

PREEMPT is intended to protect US military service members and the local communities where they operate and preventing pandemics.

January 2020 – TVG raises £0.68m at a valuation of £9.5m. This, at the time, valuing Frontier IP's equity holding at £1.6m.

June 2020 - announces the first two of its vaccine candidates to tackle COVID-19 in animals and has taken a major step forward with success in in vitro, pre-animal trial laboratory testing. After demonstrating in vitro expression of antigens belonging to SARS-CoV-2, the virus that causes COVID-19, TVG is now preparing to test the two vaccine candidates in animals.

Post year to June 30th, 2020 period end, the strong endorsements that TVG had received from government bodies internationally were enhanced by its first industrial validation, when it entered into a three-way collaboration with The Pirbright Institute and ECO Animal Health Group.

TVG Project Summary

The company is working on the following projects:

- Single dose and transmissible vaccines for Ebola and Lassa fever (DARPA);
- Single dose vaccine for AMR Streptococcus suis in pigs (Innovate UK);
- Bovine mastitis targeting E. coli (BactiVac);
- Bovine tuberculosis (DEFRA support);
- African swine fever virus in pigs (self-funded); and
- COVID-19 animal and human vaccine (self-funded).

Frontier IP contribution

- Coordinated TVG's first equity fund raising round
- Provided support for IP assignment and grant applications;
- Provided introductions to bankers and investors for future funding rounds; and
- Representation on trade mission to China.



36% Shareholding

Value: £4.9m
Last raise: £1.3m
Date: Sept 2018www.alusid.co.uk

Commercialising a novel method for producing eco-friendly composites from silicate-based waste materials

Alusid was founded in 2015 and is based in Preston UK. The company is a spin out from the University of Central Lancashire and the result of a research project at the university by Professor David Binns (Professor of Contemporary Ceramics and Head of the Silicate Research Unit) and Dr Alasdair Bremner. Their original research set out to explore ways in which waste and low-value materials destined for landfill could be repurposed into versatile architectural surface materials. The result was the development of SilicaStone – an innovative and aesthetically versatile material made from glass, ceramics and mineral waste.

Technology

SilicaStone is created through a process known as ‘sintering’ which binds the materials together using heat or pressure. This means there is no binding agent such as resin or concrete and, unlike any of the conventional ceramic processes, a much lower temperature is used thus reducing overall process energy costs.

The resulting product can be ground, polished and glazed in the same way as granite and, because of its naturally fire-resistant and UV-stable qualities, it can be used indoors and out. The product, according to Alusid, is not just suited to surfaces, it can be moulded for furniture too, with a wide colour range available. Show below are examples of Alusid products.

Alusid Tiles in Different Finishes and Colours



SOURCE: Frontier IP Group, VSA Capital Research.

SilicaStone can be cut, ground, polished and glazed just like traditional granite and, thanks to its structure, it can be produced in a huge range of colours. Made without the use of resin, SilicaStone is UV-stable and naturally fire-resistant – making it highly versatile and suited to both indoor and outdoor use.

Business Model

Alusid manufactures and sells tiles.

Commercial milestones and financing

In September 2018, Alusid raised £1.3m.

In April 2019, Parkside Architectural Tiles, the commercial arm of Topps Tiles, launched Alusid-made Sequel range.

The original intention in 2018 had been to build a plant to increase production towards 30,000m² a month in 2020. This was to be based on a single line. A purpose-built plant was thought to be required specifically because handling the tiles before firing was going to need specialist equipment. However, plant construction and equipping out would have cost an estimated £10m. Alusid, guided by Frontier IP, has since managed to achieve continuous flow tile manufacturing running on standard equipment operated by sub-contractors, removing the need to build its own volume line.

During the year ending June 30th, 2020, Alusid made significant technical progress, scaling up its technology for mass production on industry-standard manufacturing equipment. A successful pilot resulted in more than 1,000m² of tiles being made in 24 hours - previously the company was limited to making 4,000m² a year hand making tiles via a batch process at its Preston plant.

The company has collected a number of Industry awards for its product and undertaken projects for a number of prestigious clients including, COS, part of H&M, Christian Dior, Harrods, Selfridges, Pret-a-Manger, Nando's restaurants, Amazon, Selfridges, Topps Tiles and private clients in the UK and Middle East.

Alusid is in advanced discussions to widen the distribution of its products. The move to volume manufacturing gives a clear opportunity to scale up and added distribution should see rapid acceleration.

In November 2020, Frontier IP announced that Alusid had raised £250,000 via a convertible loan, including a £125,000 investment from the UK government's Future Fund. The investment from the Future Fund, which was established to support the UK's innovative businesses currently affected by COVID-19, has been matched by £100,000 from the Group and £25,000 from a private investor.

Alusid Industry Awards



SOURCE: Frontier IP Group, VSA Capital Research.

Frontier IP contribution

- Coordinated two funding rounds;
- Supported commercial progress;
- Introduced Topps Tiles; and
- Handled negotiations with key waste stream suppliers.

Competition

Frontier IP does not tend to invest directly – it secures equity stakes by providing services such as corporate finance advice, capital access and commercialisation. The Group works directly with earlier stage technology companies and with Universities to access IP rich spin outs. An important part of the business model is very early engagement with industrial partners to ensure the technology being developed can be scaled and meets real world needs and demands.

UK quoted **Mercia Asset Management PLC (MERC LN)**, like Frontier IP, has collaborative relationships with Universities and that provides 20 percent of all its investment activity (source: Mercia Fund Management). The model is different to Frontier IP in that Mercia directly invests using its balance sheet and also manages funds.

UK quoted **IP Group plc (IPO LN)**, founded in 2001, has been longer established than Frontier IP and is much larger with a NAV of £1.2bn and cash of £245m. IP Group has relationships with 17 UK universities. IP Group, like Mercia Asset Management, invests directly and has a portfolio valued at £973m (source: IP Group 2020 Interims) – of that portfolio value, its equity holding in **Oxford Nanopore Technologies** is now valued at £258m. This demonstrates, as has been the case for Frontier IP with Exscientia, just what value can be achieved from University IP.

Frontier IP is partnership and service focussed - once it starts working with a portfolio company, it does not mind if others provide capital.

The Group's innovative approach means there a number of potential competitors which touch on what it does. They include technology and management consultancies, as well as the more traditional investment-driven companies outlined above. However, there are very few, if any, doing exactly what Frontier IP does: becoming a co-founder in a company, taking a direct hands-on approach to commercial and technical development, and ensuring engagement with industry at a very early stage.

The increase in the value of the portfolio over time demonstrates that Frontier IP has been able to secure access to very attractive growth technology.

The Group's marketing strategy to gain access to growth technology opportunities involves developing and continuing to develop, strong relationships with universities, academics, industry and other organisations to source, identify and evaluate IP.

Expanding The Team

The success of the business has given Frontier IP scope to further expand and during financial year 2019 (period end June 30th 2019) the team strengthened with the appointment of Matthew White, former Head of Innovation at AB Sugar, as Chief Commercialisation Officer with a seat on the board, and Alex Pugh as analyst.

Frontier IP, since June 2019, has also announced four major appointments with existing knowledge and contacts within the focus technology clusters:

- Lucy Rowbotham, former Director of the Medical Technology Division at Cambridge Consultants, joined as Technology Commercialisation Director.
- John Price, a former Vice President Operations Europe for global food and pet care group Mars, Incorporated and current chairman of Mars pension fund trustees is now the Frontier IP senior food and agritech adviser.
- Air Vice-Marshal Gary Waterfall CBE joined as senior defence adviser after a 34-year career in the Royal Air Force, latterly as Chief of Staff at The Permanent Joint Headquarters, where he was responsible for planning and executing joint operations involving all three services around the world.
- Mark Rosten, the former Senior Vice President Development for mobile payments specialist Bango plc, has been appointed as Software Commercialisation Director, a non-board role. Mark has more than 30 years' experience in

leading software and product development teams across Healthcare, FinTech and Transport, in companies ranging from start-ups to Small and Medium-Sized Enterprises and larger corporations.

Associations

Establishing trust and being a credible partner is essential for involvement with senior academics and technologists as they seek a partner for growth. “You are the company you keep” certainly applies in Frontier IP’s external associations and how the company is perceived by academics.

- During 2019, the Group to become one of the 14 partners in Emporia4KT, a pan European project to ensure academic research is put to better use in boosting Europe’s Atlantic marine economy.
- The Group has entered into a collaboration agreement with the Royal Academy of Engineering and in April 2019 both hosted a joint event, attended by more than 100 people, at the Royal Academy’s central London headquarters.
- Frontier IP, publicly, works with the UK Department for International Trade (DIT) and in 2019 was named as a strategic partner of the UK Department for International Trade in Portugal. The Group also entered into a collaboration with the UK Royal Academy of Engineering.

The Group’s early involvement with Exscientia, now a world leader in AI-driven drug discovery, is a highly credible association for Frontier IP. The Group’s presence in Cambridge and its access to Cambridge University IP provides significant credibility – this especially given the University’s global ranking for the quality of its research.

Investment Holdings Valuation Methodology

Technology valuations are certainly an area of very active debate for investors at present and Frontier IP has highlighted two key valuation issues:

1. Globally, technology companies, even early stage, are being valued at very high multiples – this driven by low cost money and the quest for high returns. Looking to wider technology markets – the NASDAQ index is up this year by 30.8 percent - this despite a steep negative correction in March 2020 as nations went into COVID-19 lockdown and global stock markets fell.
2. How to value smaller, illiquid companies still at a relatively early development stage. In a number of instances, investors have been prepared to put their money in before the technology is fully proven, encouraging businesses to ramp up cash burn as they strive to justify their new-found valuation. There has been particular hype around the quest to achieve “unicorn” status – a valuation of US\$1bn.

Many valuations reflect the amount of capital a company is able to raise, rather than bearing any relation to technology or business fundamentals. The Frontier IP valuation approach is different and is designed to ensure valuations are based on reality.

The Group also takes a patient approach to capital requirements for companies. It finds that the best way to develop spin outs is by working in partnership with universities, academics and industry, and managing for the long term. The spin out companies, in the Group’s experience, do not always need significant sums of capital to prosper. However, they do need time to overcome the inevitable scientific, technological and commercial obstacles that arise.

Valuation Policy

When the Group first incorporates a spin out, the whole company is valued at between £50,000 and £1.0m, depending on whether IP has been transferred or not and accounting for the level of any grant funding that might have been received. The valuation technique used is the comparable company valuation, specifically comparing the entry price at which investors would typically invest in investor-ready pre-revenue companies with IP and adjusting for management’s assessment of the company’s IP.

When the company commences trading, the Group considers if this indicates a change in fair value. If there is evidence of value creation, the Group may consider increasing the value and look to comparable company valuations to estimate fair value.

At the next stage, valuations are then set through third-party funding rounds or the trading progress of the business following the International and Private Equity and Venture (IPEV) Capital Valuation Guidelines.

The Group's investments are primarily in seed, start-up and early-stage companies often with no short-term earnings, revenue or positive cash flow making it difficult to assess the value of its activities and to reliably forecast cash flows. However, as a company matures a combination of valuation techniques may be applied including discounted cash flow, industry specific valuation models and comparable company valuation multiples.

Frontier IP does not typically invest directly. Price is determined by external investors and achieving commercial milestones – the Group is not under pressure to follow its money.

Companies Approaching Inflection Points

We understand from our analysis and also discussions with Frontier IP management that a number of companies are now at important inflection points in their development. They have completed much hard toil in developing and validating their technologies and are now poised to see commercialisation materially accelerate. It is at this stage that Frontier IP can start to evaluate potential exit options for its stakes.

Companies either approaching or at inflection points, in our view, are:

Exscientia - from our earlier review of the company, it can be seen that it is highly advanced in terms of commercialisation. The company is behind the first AI-created drug to enter human clinical trials in a joint development with partner **Sumitomo Dainippon Pharma**. Its other partnerships include collaborations with **Bayer, Bristol-Myers Squibb, Sanofi, GT Aperion, Rallybio and Evotec**.

In May 2020, Exscientia raised US\$60m through a Series C funding round, led by a new investor **Novo Holdings** and supported by existing investors **Evotec, Bristol-Myers Squibb** and **GT Healthcare Capital Partners**. Exscientia is also using its AI to identify potential treatments for Covid-19 in partnership with Diamond Light Source and Scripps Research.

What happens next to this amazing company, we will see. Options not only include growing organically but also trade sale or IPO. Timing for the latter two, or if they will happen at all, is unknown. Frontier IP hold an undoubtably valuable 2.4 percent stake in this company which has captured the imagination of the global pharmaceutical industry.

The Vaccine Group (TVG) – SARS-CoV-2 is the virus that causes COVID-19 and the origin of the virus itself has not caught much attention - this despite cat data and mink culling pointing to this being a real issue, aside from the obvious origins of the disease. To date, the company has made significant progress in developing animal vaccines to tackle COVID-19, with first candidates moved into animal trials in the US and data expected this year.

Vaccines based on TVG's platform to tackle bovine tuberculosis and African Swine Fever are also ready for animal trials. US government-funded work on vaccines for Lassa fever and Ebola is progressing well, and new IP potential has emerged from rabbit trials of a bovine mastitis vaccine.

TVG and its international partners have been awarded more than £9.0m in grant funding by the UK, US and Chinese governments. It announced the completion of its first equity funding round in January, raising £0.7m.

Vaccines and zoonotic disease prevention are now much more widely discussed, particularly given the COVID-19 outbreak. On 5th November 2020, health authorities in Denmark reported 12 human cases of COVID-19 caused by a specific mink-associated variant strain of the SARS-CoV-2 virus.

In 2020, the valuations of companies involved in the development of vaccines has significantly increased.

TVG, we are sure, will be considering its next steps of corporate development based on the next phase of data from trial. Clearly there could be significant upside potential.

Nandi Proteins - the company's process control technology creates new functional proteins from plants and animals that can be used as ingredients to replace fat and E-number additives in host of processed foods.

Nandi has already announced it is collaborating with **Devro plc (DVO LN)**, a world-leading producer of collagen casings and a supplier to **Kerry Foods Group**. The company is also leading an industry consortium to develop gluten replacements in work backed by **Innovate UK and Coeliac UK**. The consortium includes **AB Mauri**, the ingredients division of **AB Foods**, and **Agrii**, a subsidiary of **Origin Enterprises**. These collaborations will help to validate the strength of its technology, which is now ready to undergo full industrial trials in food production plants. If these are successful, then commercial roll out will follow driving further valuation enhancement.

Alusid – has now proved that its tiles can be made at volume. End customers include **COS, part of H&M, Christian Dior, Nando's, Harrods, Selfridges, Amazon UK and Pret-a-Manger**. The Company also has a distribution agreement with **Parkside Architectural Tiles**, the commercial arm of **Topps Tiles**.

Manufacture utilises industry-standard tile making equipment. A logical next step would be an agreement with a major industry partner. We believe that an agreement would be transformative for the company, which has to date been hand-making its products through a batch process at its plant in Preston, Lancashire.

Companies not covered in this report but also at a point of inflexion

PulsiV Solar - was incorporated in 2013 and is a spin out from the University of Plymouth University. The company has developed internationally patented power conversion electronics technology. PulsiV's technology has very broad applicability because it improves the efficiency with which alternating current, AC, is converted into direct current, DC, and vice versa.

Power conversion is a ubiquitous requirement in electrical products. While electricity supply is AC, the electronics in most devices and household goods operate using DC at a number of different voltages; conversely, in power generation, photovoltaic solar cells generate DC electricity, but this needs to be converted into AC to be exported to the grid or used in the home. Demonstration products have included an LED driver to demonstrate mains AC being converted to device DC, a power tool battery charger, and solar microinverter for use with photovoltaic solar cells.

- The company has successfully integrated its technology into a standard battery charger significantly improving its energy efficiency. PulsiV has demonstrated that in chargers for portable power tools, for example, its power conversion technology can improve the charger power factor from around 50 to over 90 percent. The power factor is the ratio of power absorbed to power input. A higher power factor improves energy efficiency and reduces energy costs.
- In solar generation, micro-inverters operate individually on a single solar panel converting direct current (DC) electricity generated by single solar cells to alternating current (AC). With a micro-inverter, each solar panel located in a large array, the performance monitored and optimised - this given that orientation, shade and dirt can impact power output. Conventional inverters cannot do this as they take combined power, rather than off each solar panel, and are located at distance from the solar panel arrays. Roof top residential and commercial, are the largest markets for micro-inverters. PulsiV has demonstrated that its technology is significantly more energy efficient than existing micro-inverters.
- PulsiV technology has already been awarded patents in the United States, Europe, China, Taiwan, Australia and Mexico, with a further patent also proceeding to grant in China. The patents cover both power conversion and solar micro inverter technologies. In April 2020, PulsiV was granted a patent in Japan for its pioneering power technology.

PulsiV's technology is attracting serious industry interest – electronics is a highly competitive business, given its patents and product advantages, not surprisingly the company has started design work funded by a major multinational to

incorporate its technology into a new product line. According to Frontier IP, PulsiV is also engaging with a number of large multinationals about a wide range of further industrial applications.

In April 2019, Bosch UK entered into an agreement to work with PulsiV Solar to optimise the design its energy-efficient solar micro-inverter prototype. For the commercial product, the Company is targeting an improvement on energy delivered to the grid. According to Bosch, “Pulsiv has technology which increases the output of solar panels by up to 30 per cent and Bosch with its leading engineering expertise on software and sensors will aim to accelerate the product development and testing.”

Pulsiv’s potential markets are very attractive:

- ResearchandMarkets.com in a September 2020 report estimated the cordless power tools market to be worth \$16.6bn in 2020. This represents significant volumes of chargers. Leading producers include Stanley Black & Decker (NYSE SWK), Bosch (NSE BOSCHLTD), Makita Corporation (TYO 6586) and Metabo (Hitachi). Power tools is just one market for Pulsiv’s technology. The wider consumer electronics markets are major user of chargers and power conversion technology.
- Micro-inverters with a power output rating between 250 and 500 watts are suitable for residential and commercial applications. COVID-19 has seen a slow-down in demand and, pricing pressure on solar panels has filtered through to the market. Greater energy efficiency, as delivered by Pulsiv technology, is likely to be required to deliver more “bang per buck”.
- As residential and commercial solar markets in time recover, the global micro-invertor market undergo significant expansion. Research from MarketsandMarkets estimate the market will be worth \$2.5bn in 2020 and forecast it to grow to \$6.5bn in 2025. Leading manufacturers include ABB (SWX ABBN), Chilicon Power, EnPhase Energy (NASDAQ ENPH), Infineon Technologies (ETR IFX), Sensata Technologies (NYSE ST), Siemens (ETR SIE) and SolarEdge Technologies (NASDAQ SEDG).

Pulsiv technology is internationally patented and the indications are that it offers distinct technical and so commercial advantage in terms of its energy efficiency performance. The electronics market is a highly competitive, as is the micro-invertor market, and serious industry players, such as Bosch, do not normally start to evaluate electronics technology unless they see real technical advantage for their own products.

In the electronics industry, it can take a number of years and £m’s to undertake the R&D to produce new patented technology that is a step up in specification versus the competition. In terms of Pulsiv applications, we see end markets that are globally large enough and growing at a pace to accommodate a new micro-invertor producer – either stand alone or acquired to broaden the technology portfolio of a multinational electronics manufacturer.

Should Pulsiv Solar really scale, as we think it has the potential to do, then Frontier IP’s current 18.9% share could be valuable indeed.

Fieldwork Robotics – has innovative and flexible robot technology for harvesting soft fruit and vegetables. The company has been undertaking extensive technology evaluation work in collaboration with one of the UK’s largest soft fruit growers on a raspberry harvester. The company is the second in the Frontier IP portfolio to announce a collaboration with **Bosch**, which will be optimising Fieldwork Robotics’ robot arm technology and developing software to reduce cost and increase speed.

The company completed its first equity funding round this year, raising a total of £0.3m. Fieldwork Robotics has also received grant funding from Innovate UK’s Industrial Strategy Challenge Fund. COVID-19 has accelerated interest in automated crop picking and the company. In September 2020, Frontier IP announced that Fieldwork Robotics was to develop a cauliflower harvesting robot with France based **Bonduelle Group** (BON EN), one of the worlds’ largest vegetable producers.

A photograph of Fieldwork Robotics’ robot arm is shown overleaf:

Fieldwork Robotics' Fruit Picking Robot



SOURCE: Fieldwork Robotics, VSA Capital Research.

The market for agricultural robots is growing rapidly. According to market research house MarketsandMarkets, sector revenue is expected to grow to \$4.6bn in 2020 and expand at 34.5 percent compound to \$20.3bn in 2025. Leading companies in the sector include **Deere & Company (NYSE DE)**, **Trimble Inc. (NYSE TRMB)**, **AGCO Corporation (NYSE AGCO)** and **DeLaval Holdings AB**.

Given sector size and growth expectations, a trade sale would, in our view, be the most likely exit point for Frontier IP.

Financial Results

For the equity holdings acquired, any subsequent movement in the value of the holdings is shown in the P&L account as an IFRS adjustment. Like its peers, Frontier IP does not always, or is not able to, disclose the up to date financial performance of each portfolio company. This is unfortunate as we believe that a number are certainly already revenue generating, if not profitable.

Note: we unable to provide full financial forecasts on Frontier IP. The Groups' equity holdings are in private companies and there are no financial forecasts available for the companies, which there would be if they were publicly quoted. This creates lack of valuation visibility. Any valuation given is that at the time of Frontier IP results, not what valuation could be in future.

Group profit is generally from the valuation of stakes, not the provision of services. Accounting revenue is therefore not predictable enough to enable us to provide financial forecasts.

We have shown historic financial data which we hope will give investors a feel for the financial mechanics of the business. In our sample overview of companies in which equity is held, we outline the quality of technologies and what we see as their wider potential - this could provide future valuation gains and therefore an increase in Frontier IP valuation.

Revenue - for the year to 30 June 2020, which is the aggregate of services revenue and unrealised gain on the revaluation of investments, revenue increased by 49% to £6.4m (FY2019: £4.3m). In FY2020, revenue from services generated £0.4m and unrealised gain on the revaluation of investments generated £6.0m.

The value of the Group's equity investments in FY2020 increased to £19.4m (FY2019: £13.3m) and debt investments of £0.9m (FY2019 £0.4m) with overall net assets increasing to £25.9m (FY2019: £17.6m) – this resulted in FY2020 net assets per share of 51.0p vs. 41.4p and an EPS 8.76p vs. 5.77p.

Significant movements during the year ending June 2020, as reported in the recent Full Year results included:

The valuation of the Group's investment in **Exscientia** on 30 June 2020 was £4.4m, 23 percent of the Group's total equity investments and 17 percent of its net assets on 30 June 2020.

The valuation of the Group's investment in **PulsiV Solar** on 30 June 2020 was £3.6m, 18 percent of the Group's total equity investments and 14 percent of its net assets on 30 June 2020.

The increase in the value of the Group's holding in PulsiV over the year to 30 June 2020 was £2.7m, 44 percent of the Group's net unrealised profit on the revaluation of investments and 63% of profit for the year to 30 June 2020. The significant inputs into the valuation of the Group's holding in PulsiV included indication of the price of investment on 30 June 2020 and beyond as well as progress since the year end.

The valuation of the Group's investment in **The Vaccine Group (TVG)** on 30 June 2020 was £3.0m, 16 percent of the Group's total equity investments and 12 percent of its net assets on 30 June 2020. The increase in the value of the Group's holding in TVG over the year to 30 June 2020 was £1.4m, 24 percent of the Group's net unrealised profit on the revaluation of investments and 34 percent of profit for the year to 30 June 2020. The significant inputs into the valuation of the Group's holding in TVG included an assessment of the progress made in the five projects in progress at 30 June 2020 since the most recent funding round in January 2020, the growth in valuation of vaccine companies over the period and a discounted cash flow model.

Administrative expenses - FY2020 administration costs rose by 16 percent to £2.2m (FY2019: £1.9m). The increase was primarily due to increased staff salaries and associated costs. During FY2020 administration costs rose by £0.2m and share based payments by £0.1m.

Earnings - Frontier IP, in FY2020, had a tax asset for cumulative unrelieved management expenses and other tax losses of £1.6m (FY2018: £1.2m) available for use to offset future profits.

FY2020 profit before tax increased by 78 percent to £4.2m. Given the Groups' tax losses, this was not subject to corporate tax. We understand from Frontier IP that substantial shareholdings are exempt from CGT when realised, so on the one hand an actual charge only arises on realisation, and under the current regime that would be nil for many of the holdings.

FY2020 EPS (47.8m weighted average shares in issue) increased by 52 percent from 5.77p to 8.76p and in FY2020, the diluted EPS increased by 53 percent to 8.41p (49.8m weighted average shares in issue).

Cash balances - in FY2020 the Group's cash balances increased by £1.5m to £3.0m. Operating activities consumed £1.8m (FY2019: £1.3m) and financial assets at fair value were purchased at £0.6m (FY2018: £0.8m). The Group raised cash of £3.8m net of costs through a share placing in November 2019.

Post year end June 30th, 2020, the Group raised £2.2m net of costs in July 2020.

Net Asset Value (NAV) - at FY2020 close Net Asset Value per share was 51.0p (FY2019 41.4p; 1H19 38.8p). Debt investments reflecting loans made to portfolio companies stood at £0.8m (FY2019 £0.4m).

Valuation

Frontier IP is earning fees from providing support and for 1H20 reported revenue was £0.17m. However, this is too small a base from which to establish potential P/E ratios etc. Losses and gains from portfolio transactions are likely to be lumpy and difficult to predict.

The Group secures its equity stakes at nil value – they are earned through its work. Its earnings are therefore deferred until point of exit. From an accounting perspective, the Group is reporting earnings primarily based upon an increase in value in its portfolio albeit those earnings do not translate into hard cash without an exit.

- In 2020, Frontier IP Group reported 8.4p diluted EPS. At today's share price of 67p, this trades the Group on a Trailing Twelve Month (TTM) P/E of just 8.0x. This looks just too low for a business that has P&L earnings growing at a high double-digit percentage.

We have to therefore consider Frontier IP's Net Asset Value (NAV) in relation to the market value of the shares.

- The Group's market capitalisation is £37.0m and EV £34.0m – this based on £3.0m cash at Full Year end June 2020.
- Frontier IP Group's portfolio at Full Year end was valued at £19.4m, the Group NAV at £25.9m (including £2.0m in goodwill). This a **NAV per share of 51.0p**.

The table below sets out the Price/NAV comparison for Frontier IP Group and a number of quoted peers.

Peer Group Analysis

Company	LSE Ticker	Market Cap. £m	Price p/sh.	Last reported annual EPS	Trailing Twelve Months P/E	NAV £m's	NAV/sh. (last annual reported)	NAV Per share multiple
Polar Capital	POLR	573	582	43.0	13.5	116	119	4.9
Intermediate Capital Group	ICP	4,560	1,550	38.2	40.6	1,976	463	3.3
Gresham House	GHE	250	780	n/a	n/a	90	340	2.3
Frontier IP	FIPP	34	66.5	8.4	7.9	26	51	1.3
HgCapital	HGT	1,257	306	45.7	6.7	1,040	255	1.2
Draper Esprit	GROW	876	630	33.0	19.1	660	555	1.1
Oakley Capital	OCI	493	263	n/a	n/a	686	345	0.8
IP Group	IPO	892	84	n/a	n/a	1,142	108	0.8
Mercia Asset Management	MERC	86	19.5	n/a	n/a	141	32	0.6

SOURCE: Bloomberg, Company Data, VSA Capital Research

With a last published annual (June 2020 year-end) NAV per share of 51.0p per share and share price of 67p, Frontier IP trades on a Price/NAV ratio of 1.3x. With a view to looking at Frontier IP'S valuation potential, we look at those companies with a NAV per share multiple above 1.0x to get a feel for valuation drivers:

Polar Capital, Intermediate Capital Group and Gresham House are very large asset managers – they mainly manage third party funds (other people's money), with, in the case of Intermediate Capital, some equity stakes as a part of their balance sheet NAV. In the main, their business is to generate profits and earnings per share from fees for managing the funds that they oversee ("Assets Under Management") rather than equity stakes they directly hold on their balance sheets.

Polar Capital, Intermediate Capital Group and Gresham House respectively, have Assets Under Management (AUM) of £15.3bn, £41.2bn and £3.3bn. Given the size of AUM, the funds tend to hold publicly quoted, large capitalisation companies that, by their nature are liquid. The more people that invest in their funds, the greater the earnings from fees and cash generated to boost their balance sheet NAV.

Polar Capital has strong exposure to technology and healthcare. Gresham House has funds for in battery storage for renewable generation, small and mid-cap company funds and also a Venture Capital Trust fund, whilst Intermediate Capital Group manages a broad range of assets in debt and credit alongside equity. These three large funds have over recent months enjoyed double digit growth in both AUM and fees. This combined with their liquidity and own balance sheet strength sees them command a **high NAV per share multiple**.

HgCapital trust is quoted Private Equity (PE) company that has a focus on investing in buyouts of more defensive software and services businesses including ERP, compliance, tax, legal, payroll and accounting software. In software it seeks IP and also a SaaS model that can generate high margins. HgCapital invest in companies that are **mainly private**, European and with enterprise values ranging from £50.0m to over £1.0bn. HgCapital's August 31st year to date net assets rose by £113m to £1.15bn. Post August 31st 2020, over £250m (net of carried interest) was returned to HGT through the **full exits** of Evaluate, Citation and Sovos in addition to the partial sale of Visma with strong uplifts to book value. **The Group has a historic track record of growth** - £1,000 invested 20 years ago would now be worth £13,262 - a total return of 1,226 percent.

Draper Esprit is a quoted leading Venture Capital firm that invests high growth, early stage, **private, disruptive technology companies**. Like Frontier IP, it focuses on strong IP and businesses with potential for trade sale or IPO. Draper Esprit has four technology clusters: Consumer Technology, Enterprise Technology, Hardware & Electronics, Digital Health & Wellness. Year ending March 31st, 2020 saw £40.4m in profit generated and the gross portfolio value **rise by 18.0 percent to £703m**. The core portfolio companies combined raised \$1.8bn – this helping to substantiate their overall valuation. Since IPO in June 2016 to year-end March 2020, Draper Esprit had exited 22 companies, realising over £105.0m in cash.

Frontier IP Valuation

We see a number traits in the above companies that are trading on NAV per share multiples above 1.0x namely track record of NAV growth, strong earnings, growth sector exposure, access to high quality investments and also, for those exposed to private companies, exits in terms of stakes sold, trade sale or IPO. Frontier IP trade on a NAV per share multiple of 1.3x.

NAV growing strongly, absent of exits – the value of the Group's equity holdings, with its NAV and profits derived from NAV increases, are growing strongly. In FY2018 the value of Frontier IPs' existing equity stakes increased by **34 percent** to £9.0m, in FY2019 by **47 percent** to £13.3m and in FY2020 by **47 percent** to £19.4m.

Exposure to high growth technology sectors and quality IP access – the Group's involvement with Exscientia's original AI technology dates back to 2011 and TVG's vaccine technology to 2012. It is focussed on technology sectors of great interest to industry and where it has developed a deep understanding, skills and expertise. An important part of the Group's work is in validating technology and, with the early involvement of industry partners, ensuring it can be scaled.

The Group seek to establish a reputation for expertise and adding value in specific areas of technology. This attracts technology IP producers be they academic institutions or technology companies to Frontier IP. As earlier noted, the Group is able to secure early access to cutting edge IP through its relationships.

Broad increase in investment values reflecting a strong model – in 2020, £2.7m of the equity investment gain related to Pulsiv (18.9 percent stake held) and £1.4m to TVG (17.0 percent stake held) with the balance of the overall £6.1m rise from the 17 other companies in the portfolio.

Market opportunity and scaling for growth – there is no lack of market opportunity given Universities are producing high quality research and yet only 23 percent can be replicated by industry. Global enterprise, more than ever, depends on technology to provide differentiation. With UK industry investing £23.7bn in R&D to develop new products, Frontier IP has a growing opportunity to help University spin out companies to commercialise their IP. In the year to June 2020, more than half of the Groups portfolio companies were industry collaborations. To capture this market opportunity, Frontier IP now has the capacity to accelerate growth and has made recent hires across its four technology clusters.

NAV growth potential from companies at inflexion point – the Company today is valued at £37m and has NAV per share/share price multiple of 1.3x. We think this multiple definitely has room to expand. The Company has a 2.4 percent

stake in AI drug discovery company Exscientia which has raised £100.0m in the last two years, secured commercial agreements worth £500m partnering with the global pharmaceutical industry, and was behind the first AI created drug to enter clinical trials in partnership with Sumitomo Dainippon Pharma, would appear to have all the potential to achieve significant valuation. A \$1bn valuation for Exscientia would see Frontier's stake worth £18.5m.

Frontier IP has a 26.7 percent equity holding in Cambridge based Fieldwork Robotics which has flexible and innovative robot technology for harvesting soft fruit and vegetables. The company, with Frontier IPs support is attracting commercial interest. Companies in the sector are being acquired by agricultural equipment makers - global food producers are seeking to address increased demand from population growth and widening food tastes at a time of decline in agricultural workers through urbanisation.

PulsiV is certainly at an earlier stage of maturity than Exscientia, however, in our view, given its patents, level of current commercial interest and size of markets, has every opportunity to be scaled into a fully-fledged electronics company. Frontier IP has an 18.9 percent stake.

The company holds equity stakes in 19 IP led technology companies across sectors with long-term structural growth opportunity and that are also active as multinationals acquire to build differentiated, defensible, technologies. The company has yet to have an exit to crystallise cash value. However, given the number of companies at point of inflexion, including Exscientia, PulsiV and Fieldwork Robotics, this is becoming a real possibility over the next twelve months. Given this, and continued news on industry involvement coupled with external funding for the overall portfolio, and possible exit event, **we believe that Frontier IP shares offer excellent value.**

Key Risks

Requirement for capital

Until Frontier IP generates cash through an investment realisation it will rely on raising additional capital to fund the Group's operations. The uncertainty centres on the ability of management to identify and effect realisations from the portfolio and generate service revenue streams to reduce the Group's reliance on raising money from capital markets. In order to manage this risk, the Group continues to pursue its aim of actively seeking realisation opportunities within its portfolio and growing service revenue to reduce the requirement for additional capital raising.

Portfolio value

The principal financial risks of the business are a fall in the value of the Group's portfolio and the impairment of the value of goodwill. With regards to the value of the portfolio itself, the fair value of each portfolio company represents the best estimate at a point in time and may be impaired if the business does not perform as well as expected, directly impacting the Group's value and profitability. This risk is mitigated as the size of the portfolio increases. The value of goodwill is linked to the progress of the existing portfolio and to continued identification and acquisition of equity stakes in new portfolio companies.

Portfolio company outstanding loans

There is a risk of certain portfolio companies being unable to repay outstanding loans or trade debt owed to the Group. The Group aims to mitigate this risk by helping ensure that these portfolio companies meet planned milestones and are in a position to finance their business plans, typically through fundraising, and repay the debt when due. The directors (source: Frontier IP Final Results statement November 2019) are confident that Nandi, Alusid and Fieldwork Robotics will be able to raise sufficient funds to finance their business plans and commence payment of the debt.

COVID-19

The COVID-19 outbreak is a cause of significant uncertainty, including the ways it could delay equity funding rounds for portfolio companies. This means that Frontier IP may have to consider extending further financial support if necessary. The outbreak could also hinder the progress of projects as academic institutions shut down or limit access to research facilities, as well as the broader economic impacts. The Group is putting in place mechanisms to support the portfolio companies by understanding the specific risks they are facing and taking steps to mitigate them. These include maintaining tight control of cash outflow and seeking to make use of government support measures where appropriate. Obviously, given the speed with which the outbreak has developed and continues to develop, this is work in progress (source: Frontier IP Interim Results statement March 2020).

Early stage spin out

Early stage spin out companies are particularly sensitive to downturns in the economic environment. Any downturn would mean considerable uncertainty in the capital markets, resulting in a lower level of funding activity for such companies and a less favourable exit environment. The impact of this may be to constrain the growth and value of the Group's portfolio and to reduce the potential for revenue from funding advisory work. The Group seeks to mitigate these risks by maintaining relationships with co-investors, industry partners and financial institutions.

Reduced Public funding for Higher Education

This may have a knock-on impact on research funding levels, may lead to universities reviewing their approach to commercialisation or may encourage consolidation in the sector. Future uncertainty over commercialisation partnerships could negatively affect the Group's existing partnerships and the potential for new partnerships, with reduced commercialisation activity and a decline in emphasis on commercialisation resulting in a decline in the Group's revenue streams.

Historic Financial Performance

Profit and Loss (£m's)

Year end June	FY2018	FY2019	FY2020
Revenue from services	0.3	0.4	0.4
Unrealised profit on the revaluation of investments	2.1	3.9	6.0
Revenue	2.4	4.3	6.4
Administrative Expenses	-1.5	-2.0	-2.2
EBIT	0.9	2.3	4.2
Interest income on short term deposits	0.0	0.0	0.0
Profit from operations and before tax	0.9	2.4	4.2
Taxation	-	-	-
Net profit	0.9	2.4	4.2
Profit per share attributable to equity holders of the company			
Basic EPS	2.36	5.77	8.76
Diluted EPS	2.25	5.51	8.41

Source: Company data, VSA Capital Research.

Cash Flow (£m)

Year end June	FY2018	FY2019	FY2020
Cash flows from operating activities			
Cash used in operations	-1.0	-1.3	-1.8
Taxation paid	0.0	0.0	0.0
Net cash used in operating activities	-1.0	-1.3	-1.8
Cash flows from investing activities			
Purchase of tangible fixed assets	0.0	0.0	0.0
Purchase of financial assets at fair value	-0.2	-0.8	-0.7
Interest received and other	0.0	0.0	0.1
Net cash used in investing activities	-0.2	-0.8	-0.6
Cash flows from financing activities			
Proceeds from issue of equity shares	0.0	2.6	4.2
Costs of share issue	0.0	-0.2	-0.3
Net cash generated from financing activities	0.0	2.4	3.9
Net increase / (decrease) in cash and cash equivalents	-1.2	0.4	1.5
Cash and cash equivalents at beginning of year	2.3	1.1	1.5
Cash and cash equivalents at end of period	1.1	1.5	3.0

Source: Company data, VSA Capital Research.

Balance Sheet (£m)

Year end June	FY2018	FY2019	FY2020
Tangible fixed assets	0.0	0.0	0.0
Goodwill	2.0	2.0	2.0
Equity investments	9.0	13.3	19.4
Debt investments	0.2	0.1	0.9
Non-current assets	11.2	15.4	22.3
Debt investments	0.0	0.4	0.0
Trade receivables and other current assets	0.6	0.5	0.8
Cash and cash equivalents	1.1	1.5	3.0
Current assets	1.7	2.4	3.8
Total assets	12.9	17.7	26.1
Trade and other payables	-0.2	-0.1	-0.2
Current liabilities	-0.2	-0.1	-0.2
Net Assets	12.7	17.6	25.9
Equity			
Called up share capital	3.8	4.2	5.1
Share premium account	7.8	9.8	12.8
Reverse acquisition reserve	-1.7	-1.7	-1.7
Share-based payment reserve	0.2	0.3	0.5
Retained earnings	2.6	4.9	9.2
Total equity	12.7	17.6	25.9

Source: Company data, VSA Capital Research.

Disclaimer

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BUY: The stock is expected to increase by in excess of 10% in absolute terms over the next twelve months.

HOLD: The price of the stock is expected to move in a range between -10% and +10% in absolute terms over the next twelve months.

SELL: The stock is expected to decrease by in excess of 10% in absolute terms over the next twelve months.

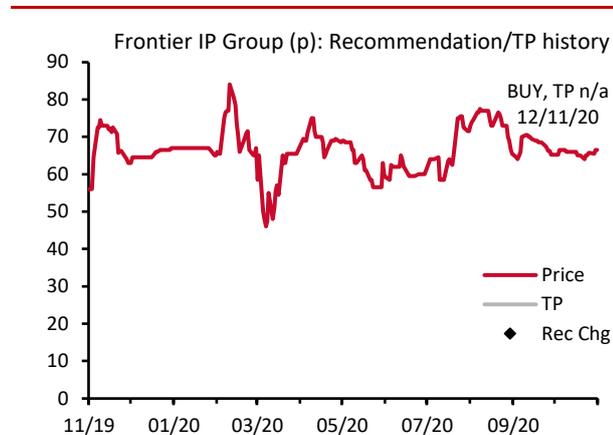
In addition, on occasion, if the stock has the potential to increase by in excess of 10%, but on qualitative grounds rather than quantitative, a **SPECULATIVE BUY** may be used.

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Equities breakdown: 31 August 2020	Spec. BUY	BUY	HOLD	SELL
Overall equities coverage	10%	90%	0.0%	0.0%
Companies to which VSA has supplied investment banking services	100%	100%	0.0%	0.0%

Recommendation and Target Price History



Valuation basis

Our recommendation is not based on a quantitative valuation.

Risks to that valuation

Financing risks for FIPP and its portfolio companies, general market risks, COVID-19.

This recommendation was first published at 12/11/20.