

Herald Investment Trust

Backing growing businesses

The Technology sector has been rising strongly in recent months. In this note, we discuss a number of stocks that contributed to a near 40% increase in Herald Investment Trust's NAV over the year to the end of May 2017. Nevertheless, Herald's manager is convinced that UK technology companies in particular, which comprise over half the portfolio, have the growth potential to justify continued progress.

The opportunity set for technology and media companies is considerable, allowing the best of them to deliver structural growth in a low-growth world. Currently, smaller, listed technology companies are seeking cash to help finance their expansion plans - and Herald stands ready to supply funding, to the right companies at the right price, laying the foundation for potential future outperformance. In addition, Herald's shares are available at an attractive discount to asset value and its board and the board has a record of buying back opportunistically.

Small-cap technology, communications and multi-media

Herald seeks to achieve capital appreciation through investments in smaller quoted companies, in the areas of technology, communications and multimedia. Investments will be made globally, although the portfolio has a strong position in UK stocks.

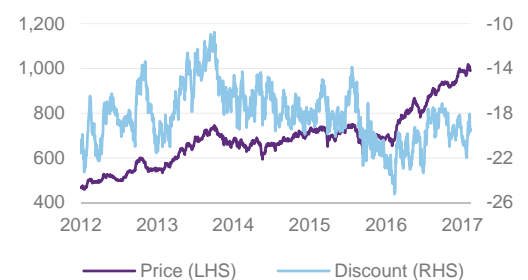
Year ended	Share price total return (%)	NAV total return (%)	B'berg World Tech. TR. (%)	B'berg Sil. Val. Hi Tech. TR. (%)	Numis ex IC plus AIM TR (%)
31/05/13	17.5	15.9	14.0	10.4	30.0
31/05/14	23.3	16.6	8.8	17.1	17.5
31/05/15	6.2	9.2	34.0	38.1	5.6
31/05/16	(3.3)	0.9	(2.5)	(3.7)	(1.6)
31/05/17	42.4	39.4	51.0	55.8	26.4

Source: Bloomberg, Morningstar, Marten & Co

Sector	Small media, comms and IT
Ticker	HRI LN
Base currency	GBP
Price	990.0p
NAV	1229.85p
Premium/(discount)	(19.5%)
Yield	Nil

Share price and discount

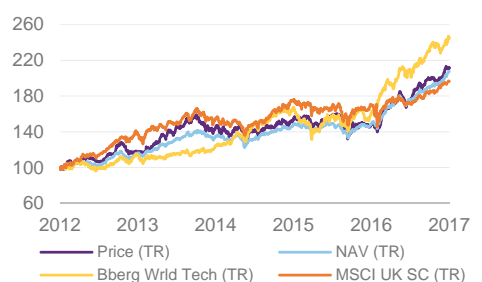
Time period 31/05/2012 to 06/07/2017



Source: Morningstar, Marten & Co

Performance over five years

Time period 31/05/2012 to 31/05/2017



Source: Morningstar, Marten & Co

Domicile	United Kingdom
Inception date	21 February 1994
Manager	Katie Potts
Market cap	706.6m
Shares outstanding	71.4m
Daily vol. (1-yr. avg.)	88,234 shares
Net cash	7.7%

[Click here for our initiation note](#)

[Click here for our most recent update note](#)

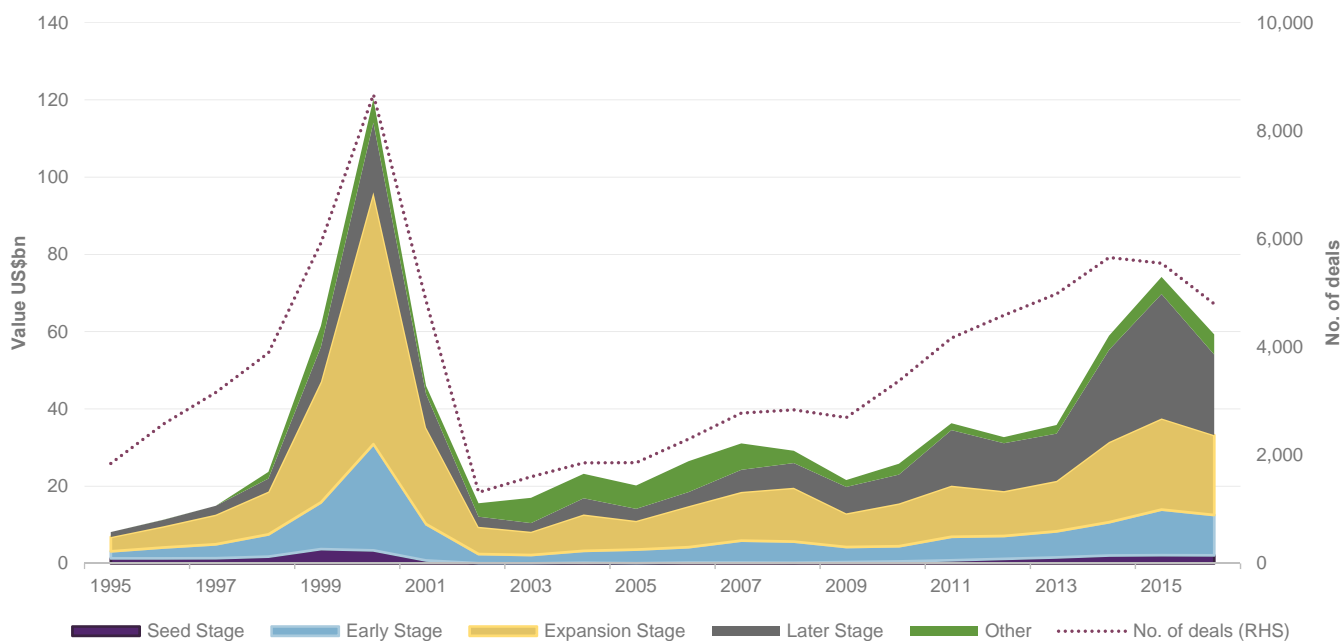
An overview of the technology sector

Pockets of bubble

A 'frothy' venture capital market is squeezing salaries and valuations of unlisted companies

Katie Potts, the manager of Herald (Katie), says that there are 'pockets of bubble' within the technology sector. One of these is in the salaries paid to developers, which have soared, in California in particular. Part of the reason for this is that the venture capital (VC) market for unlisted technology companies in the US has been 'frothy', although the amount being invested is slowing (see Figure 1). The data for Q1 2017 (not displayed on the chart) shows that 1,104 deals worth \$13.9bn completed in the quarter (down 15% and 12% respectively). The peaks in the graphs in 2014/15 were well below those of the tech boom. Nevertheless, unlisted tech companies have absorbed a lot of capital. Worryingly perhaps, many large companies attracting funds seem to be a long way from profitability. Uber, Twitter and Snapchat spring to mind.

Figure 1: US VC deals since 1995 by stage of development



Source: PWC MoneyTree, CB insights

Small companies with good patents can thrive

Many of these large, VC-backed start-ups are operating a 'land grab' model. Faced with competition from these behemoths, some investors might think smaller tech companies could struggle. Katie acknowledges that the sorts of companies that Herald owns are not well-known names. She points out, however, that, in the technology market, intellectual property counts for a lot. Small companies with good patents can thrive while profitless large caps may run into the sand.

Unlisted market valuations will, eventually, become more reasonable

At some point, the VC backers will be looking for an exit. Very few technology companies have come to the market via an IPO in recent times. The manager thinks this may be because venture backers are looking for valuations that equity markets are not prepared to match. In other words, the hype that surrounds unlisted companies is not permeating into public markets in any meaningful way. As evidence for restraint in

listed equity markets, Snapchat’s share price recently dipped below its IPO price, a milestone that Twitter ‘achieved’ in August 2015 (it is now 35% below that level). Katie thinks VC investors will, eventually, become more reasonable in terms of their price expectations.

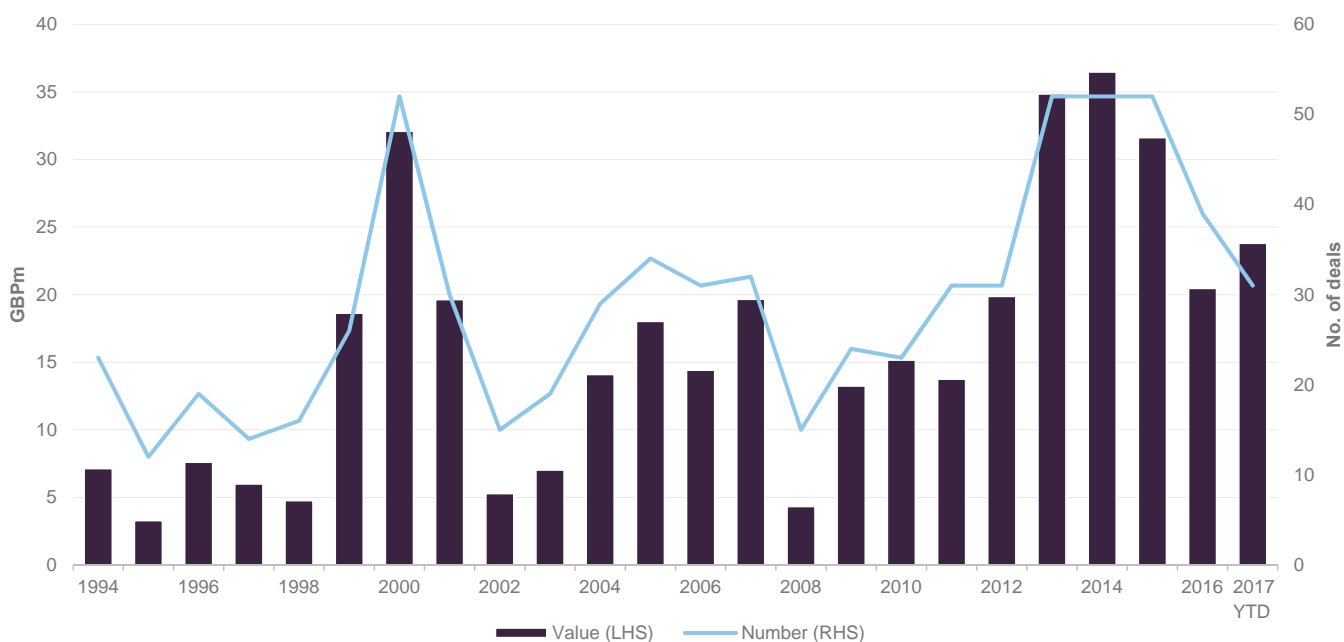
In the meantime, VC investors may be in for some nasty surprises. In our last note, Katie highlighted the failure of Powa Technologies. More recently, another British ‘unicorn’ has gone to the wall, having burned through £100m of equity and debt. Ve Interactive, an online sales optimisation company, went into administration in April 2017. It has since been bought out by its management team for £2m. A large number of high net worth individuals, rather than savvy VC investors, are said to have backed Ve Interactive.

Listed companies looking for expansion capital

Herald stands as a force for good, as a provider of much-needed capital to expanding technology businesses

We may not be seeing many IPOs, but cash calls from listed technology companies are a feature of the market at the moment. Fortunately, Herald has cash available to deploy in the best opportunities. Katie says she is meeting two or three companies a day that are looking for cash. However, she is exercising caution. We think that Herald stands as a force for good, as a provider of much-needed capital to expanding technology businesses, particularly those in the UK. Figure 2 shows the value and number of primary placings that Herald has supported since launch: 2017’s figure looks set to match or perhaps even exceed 2014’s.

Figure 2: Herald’s participation in primary placings



Source: Herald Investment Management

Technology in the UK

UK stocks make up over half the portfolio. Since launch, Herald’s UK holdings have provided some of its best returns. In recent years however, UK tech companies have lagged their overseas counterparts. Katie says that this has left them looking even more attractively valued, relative to US peers in particular. Even the handful of companies set up to maximise the potential of the intellectual property being created in British

universities has de-rated. These were trading on big premiums to asset value but this is no longer the case.

If you wander around London's Old Street, you would be forgiven for thinking that we were back to the heady days of the tech boom. The rate of company formation in the area has been phenomenal; Katie cites a figure of 32,000 digital companies formed in the EC1V postcode alone. This explosion in the number of start-ups has not yet translated into more opportunities for Herald, however, although it may do in time.

UK election result was priced into markets

Katie thinks that the UK election result was priced into markets. These had fallen on heightened uncertainty as the vote loomed. Looking ahead, she is concerned about possible anti-business policies that could emanate from a Labour government should the swing to the Left continue.

Sharp decline in takeover activity

Katie thinks that, given the political backdrop, businesses may be wary of making investments and, as evidence of this, she reports that takeover activity has declined sharply so far in 2017. She fears that, in the UK, jitters around the Brexit negotiations may have been compounded by the prospect of a hung parliament. It may also be that US companies are thinking of repatriating cash (now that a more favourable US tax regime seems likely) rather than making acquisitions. She is concerned that their alternative strategy is to poach staff from UK companies and cites Apple's recent recruitment of a number of key employees from Imagination Technologies as an example of this.

The practical impact of Brexit on trading for the companies in Herald's portfolio may be limited. In the Technology sector, many companies tend to operate in global markets. Within the portfolio, GB Group, the largest holding, has more of a domestic focus than most but is growing its overseas business (see page 6).

Secular growth in a low-growth world

Katie highlights a number of themes that are being developed by the companies that Herald holds. These include:

- Smartphones
- Productivity enhancements
- Security and identity management
- Online/digital economy
- Fintech
- Internet of things
- Healthcare
- Clean energy
- IP telephony and call centre solutions
- Big data and cloud computing
- Semiconductors, equipment and tools

To give just a couple of examples. In the security subsector, the recent ransomware attack suffered by the NHS and others may finally force governments to devote more resource to security. High-profile data breaches seem to be occurring with ever greater frequency. For example, it recently emerged that Deep Root Analytics, a firm charged with gathering data on the voting preferences and attitudes of America voters, had left such information on 198m people on a publicly accessible Amazon server. Katie notes that the estimated annual cost of cybercrime is more than six times the amount spent on security.

Herald lists 19 holdings that are exposed to this area of the technology market including GB Group (identity data intelligence), SQS (software and IT system security testing) and Radware (cyber security including DDoS protection).

In IP telephony and call centre solutions, there has been dramatic growth in the VoIP (voice over internet protocol) market in recent years and this is expected to continue for some years yet. Global market research firm, Transparency Market Research, says that the phone-to-phone VoIP subscriber base is forecast to grow by 16.6% per annum compound between 2014 and 2020, and that revenue from long-distance VoIP calls is expected to grow by 8% per annum compound over the same period. At the same time, the growth in online retail is leading to a boom in call centres. Herald holds 10 companies seeking to benefit from this area, including Eckoh (call centres), Five9 (call centre software) and 8x8 (VoIP specialists).

Asset allocation

Figure 3: Geographic allocation as at 31 May 2017*

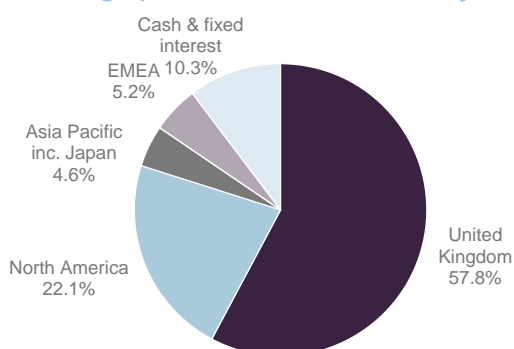
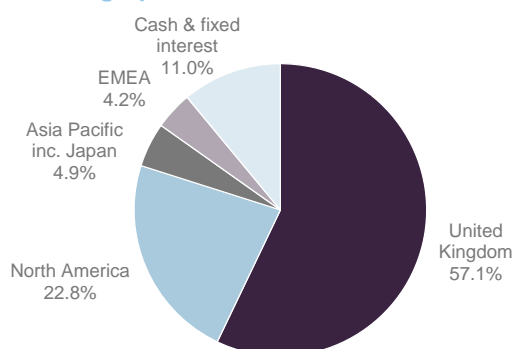


Figure 4: Geographic allocation as at 30 November 2016*



Source: Herald Investment Management *Note: as a proportion of gross assets

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The changes to Herald's asset allocation have been minor over the past six months. Perhaps the most significant change is an increase in exposure to EMEA. This is due, in part, to positive performance from that part of the portfolio.

Figure 5: Top 10 holdings as at 31 May 2017

Holding	Sector	Geography	Allocation 31 May 2017 (%)	Allocation 30 November 2016 (%)	Percentage point change
GB Group	Software & computer services	UK	2.9	2.0	+0.9
Diploma	Support services	UK	2.8	2.7	+0.1
Idox	Software & computer services	UK	2.5	2.2	+0.3
IQE	Technology hardware & equip.	UK	2.2	1.4	+0.8
Next Fifteen Communications	Media	UK	1.8	1.6	+0.2
Silicon Motion Technology	Semiconductors	US	1.7	1.8	-0.1
Pegasystems	Software & computer services	US	1.6	1.3	+0.3
M&C Saatchi	Media	UK	1.5	1.5	0.0
BE Semiconductor Industries	Technology hardware & equip.	Netherlands	1.5	1.1	+0.4
Telit Communications	Technology hardware & equip.	UK	1.3	1.2	+0.1
Total top 10 holdings			19.8		

Source: Herald Investment Management, Marten & Co.

Two stocks, Pegasystems and Telit Communications have moved into the top 10 holdings since we last wrote, at the expense of Avesco, which was sold following a takeover, and Imagination Technologies, whose share price was hit when Apple announced it would discontinue the use of its chips (see performance on page 8).

GB Group

Figure 6: GB Group share price



Source: Bloomberg, Marten & Co

When we last wrote, GB Group, which is now the largest stock in the portfolio, had just experienced a sharp fall in its share price. Investors had found a trading statement disappointing. Katie was convinced of the merits of the company, however, and she has been proved right. The shares rose by 63% over the six months ended 31 May 2017. On 9 May 2017, GB Group announced the acquisition of Postcode Anywhere (Holdings), which trades as PCA Predict, for £74m. Although a UK based company, PCA Predict has considerable business overseas with offices in the US and Germany. GB Group raised £58m through a placing to help finance the deal. Katie welcomes the broadening of GB Group's business into overseas markets but Herald did not take part in the fundraising.

IQE

Compound semiconductor specialist IQE has seen its share price rise by 4.7x over the past year. The company has been diversifying its revenue base away from mobile technology and now has potentially exciting products aimed at the optical sensor market. End uses for its technology include high-speed communication, the 'internet of things', big data, advanced medical technology, energy efficiency and the sensors used in driverless cars.

Pegasystems

Pegasystems has been a feature of Herald's portfolio since 2003 when Katie was buying stock at around the \$4 mark. The company's rules-based workflow software has applications in the fields of CRM and BPM. It competes with companies such as Salesforce. Recent results have been well received by investors. Katie says she topped up the holding in 2014 at \$24 and, more recently, she has been reducing the position at prices in the upper 50s.

Telit Communications

Telit Communications provides services that support the 'Internet of Things'. Its products are used across a wide range of industries, including retail (it can be used to monitor inventory) and enabling smart buildings (controlling lighting, utilities, heating, ventilation and air conditioning). It has just made its first sale of its automotive communication module, designed to support remote software updates in a secure environment. Its shares have performed well over the past year but are lower than their April highs, held back perhaps by a £39m fundraising in May (in which Herald did not participate).

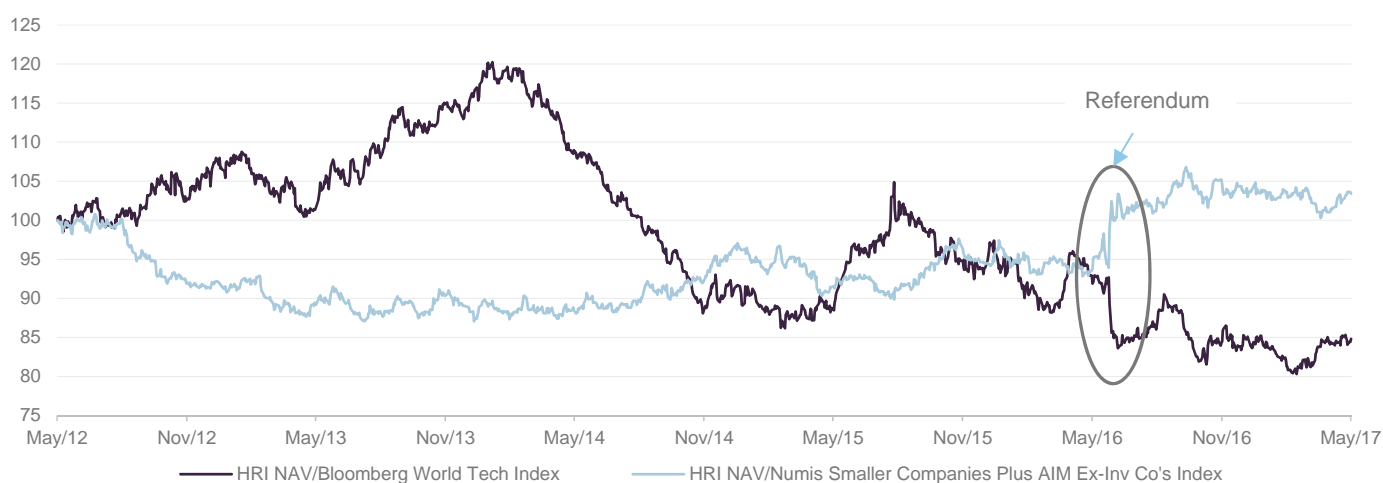
Performance

Up-to-date performance information on Herald is available on the [QuotedData website](#)

Herald's long-term performance history was discussed in our previous note. The fund's excellent long-term track record has been maintained over the last 12 months. In its latest factsheet, Herald says the fund has returned 1236% since launch which compares very favourably with a 277% return from the Numis Smaller Companies plus Aim excluding Investment Companies index and a 990% return from the Russell 2000 Tech Index, the two indices used by Herald as performance comparators.

More recently, it is clear from Figure 7 that following the Brexit vote, Herald's portfolio did well relative to the Numis index. Nevertheless, Herald's UK exposure held back its performance relative to the Bloomberg World Tech Index, which has a strong US bias.

Figure 7: HRI's NAV relative to Bloomberg World Tech Index and Numis Smaller Companies Plus AIM ex Investment Companies Index over five years to 31 May 2017



Source: Bloomberg, Morningstar, Marten & Co

Katie says that recent results announcements in the technology sector have been solid. This helped drive a rally in the sector. Over the past year, from a low point late in June 2016, the Dow Jones US Technology Index climbed by 47% to reach a peak on June 8 2017. The next day, Goldman Sachs published a note that questioned the sustainability of the US technology sector rally. This seemed to trigger some profit taking but the markets have stabilised since.

Figure 8: Cumulative total return performance to 31 May 2017

	1 month (%)	3 months (%)	6 months (%)	1 year (%)	3 years (%)	5 years (%)
HRI NAV	5.1	9.6	18.3	39.4	53.5	107.5
HRI share price	5.2	6.8	19.9	42.4	46.2	111.7
Bloomberg World Tech	5.4	6.1	17.9	51.0	97.3	144.6
Bloomberg Silicon Valley Hi Tech	4.3	4.9	22.6	55.8	107.2	167.8
Numis Smaller Cos. plus AIM ex IC Index	2.7	9.7	19.7	26.4	31.3	100.6
Bloomberg World	2.7	1.6	8.2	30.7	52.7	100.8

Source: Bloomberg, Morningstar, Marten & Co

Positive contributions to performance

Positive contributions to recent performance have come from Isra Vision, BE Semiconductor, Data Respons, Adesto and Bango, amongst others. Some of these

may be relatively small positions but, from little acorns... Katie says that over 70 companies have made the fund more than £4m since the fund was launched in 1994.

Figure 9: Isra Vision share price (euro)



Source: Bloomberg, Marten & Co

Figure 10: Data Respons share price (euro)



Source: Bloomberg, Marten & Co

Figure 11: Imagination Technologies share price



Source: Bloomberg, Marten & Co

Isra Vision, is a German company whose products help robots 'see', aid quality control through surface inspection and are used as control systems for quality assurance (used in places such as production lines). Allied Market Research estimates that the market for robotic vision systems could be worth \$7.7bn by 2022. Its shares are up by more than 60% over the past six months.

BE Semiconductor's shares have risen by more 50% since the end of November 2016 aided by strong Q1 results. The company produces assembly equipment for the semiconductor industry. Its order book at the end of March was 130% higher than at the equivalent period the year before and margins are climbing (from 10.1% at 31 March 2016 to 22.0% at 31 March 2017).

Data Respons is a Norwegian 'Internet of Things' company developing embedded systems for a wide range of applications. It undertakes bespoke R&D projects for customers. It shares are two and a half times the level that they were a year ago as a slew of orders, particularly in its R&D services division, helped push profits higher.

Adesto Technologies provides memory solutions for the 'Internet of Things'. It underperformed in 2016 but saw its share price recover over the six months ended 31 May 2017, more than doubling from its low point. Its shares have slipped a little in recent weeks following a \$17.6m fund raise, in which Herald participated.

Bango provides mobile payments solutions. Its shares have more than doubled since the end of November 2016. The company recently announced a deal to provide Japanese customers of mobile phone company, NTT DOCOMO, with the ability to pay for goods on Amazon.co.jp.

Negative contributions to performance

In contrast, chip maker, **Imagination Technologies** (Imagination), detracted substantially from recent performance. Katie thinks that the holding has cost Herald £6m year to date. However, she points out that Imagination has generated £30m for the fund over the life of the holding, as Katie has booked profits consistently. Herald was opposed to the ousting of Sir Hossein Yassaie as chief executive in February 2016 and believes that this contributed to Imagination losing its Apple contract. Apple has hired a number of key staff from Imagination. However, Katie believes that there is still some value in the business and, on 22 June 2017, Imagination announced it had been approached by a number of parties looking to buy the whole group.

The sharp move in Imagination's share price helps illustrate the reasoning behind the level of diversification within the portfolio. Herald's NAV increased in April despite this setback.

One other stock that fell was **Opera Software**, the Norwegian company known for the eponymous web browser. Revenues are in decline and, last summer, a bid by a Chinese consortium failed to secure regulatory approval. They still went on to buy the browsing business however. The residual business was hit by delays in product launches.

One other factor holding back returns has been Herald's relatively high cash balance. Katie has not been rushing to reinvest cash that the fund received from takeovers in 2016. Now the fund has a 'war chest' to support, selectively, the current run of cash calls and to pick up stock in favoured positions, if markets adjust to Katie's valuation targets.

Fund profile

More information can be found at the trust's website:

www.heralduk.com

Readers may also be interested in our initiation note of August 2016. [Please click here to view](#)

Established in 1994, Herald invests globally in small technology, communications and multimedia companies with the aim of achieving capital growth. It is the only listed fund of its type. The trust invests globally, but has a strong bias towards the UK, which further distinguishes it from other global technology funds, that tend to be biased towards the US.

New investments in the fund will typically have a market capitalisation of \$2bn or less, but are generally much smaller when the first investment is made. If successful, these can grow to be a multiple of their original valuation. This type of investing is inherently longer term in nature and so the trust tends to have relatively low turnover. Reflecting the risks inherent in this type of investing, the trust maintains a highly diverse portfolio of investments (typically in excess of 250) to help mitigate this risk.

Herald has had the same lead fund manager since launch: Katie Potts. She was a highly regarded technology analyst at Warburg (later UBS) prior to launching the fund. Katie owns a substantial stake in the company and a significant minority stake in the management company and, clearly therefore, is motivated to ensure the success of the fund.

Previous research publications

Readers interested in further information about Herald, such as investment process, fees, capital structure, trust life and the board, may wish to read our initiation note *Invest in the future*, published on 16 August 2016, and our update note, *Tech bids demonstrate value*, published on 20 December 2016. The contents pages of our initiation note have been reproduced below. You can read the notes by clicking on them in Figure 12 or by visiting our website, www.martenandco.com.

Figure 12: Marten & Co. previously published research on Herald

Title	Note type	Date
Invest in the future	Initiation	16 August 2016
Tech bids demonstrate value	Update	20 December 2016

Source: Marten & Co.

Invest in the future – 16 August 2016

4	Fund Profile
4	Consistent management and approach
4	A major player in an ever-changing environment
6	Management arrangements
6	The state of the technology market
6	Lack of research may affect liquidity, but creates opportunities for longer-term investors
6	Shrinking institutional investor base in the UK
6	Venture capital bubble?
7	Brexit
7	UK plc for sale?
7	Restricted movement on Silicon Roundabout?
7	Staff retention and remuneration
8	Small cap versus large cap – performance and valuations
10	Investment process
10	Extensive fundamental research
10	Idea generation
10	Searching for companies with sustainable advantages
11	Safety in numbers
11	Portfolio construction
12	Sell discipline
12	Asset allocation
14	Diploma
14	Imagination Technologies
14	GB Group
15	Idox
15	Silicon Motion Technology
16	Performance
19	Dividend
20	Discount
21	Discount management
22	Fees and costs
22	Capital structure and life
22	Interest-rate swap
23	Life
23	Board
24	Management team

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