

# Taking IP to market the BTG way

*BTG plc has a simple enough mission statement – to find, develop and commercialise emerging technologies in the life and physical sciences. Getting the financial markets to understand just what it means to be perhaps the world's only full-service IP-commercialisation operation, however, can be a tough job. By Nigel Page*

The sudden 60% drop in BTG plc's share price in London on 14th November underlined the challenges facing any company seeking to build value on the basis of intellectual property commercialisation. The market's instantaneous and savage reaction to BTG's announcement that the US Food and Drug Administration (FDA) had "placed on clinical hold" a Phase II safety study of Varisolve, its potential blockbuster varicose veins technology, wiped out at a stroke much of the 400% or so increase in value the company had enjoyed in the preceding months (a cool £238 million – or over US\$350 million – in the space of a couple of hours).

The surge of selling, as investors sought to offload BTG stock, also brought into stark relief the fact that however sanguine and long-term the perspective of an IP-based company, the investment community is still unwilling to react in anything other than a knee-jerk way towards developments affecting IP-centric organisations (notably, right now, in the biotech/pharma space).

BTG had attracted very substantial media coverage this year, thanks in large part to the excitement surrounding Varisolve, the varicose vein treatment being developed by Provensis (a wholly-owned subsidiary of BTG). In August this year, BTG had announced preliminary results from the final phase of trials in Europe, with the 654-patient study showing an 83% response rate three months after treatment. Management planned to file for EU approval early in 2004, with the drug reaching the market around 12 months later. Until it made its 14 November announcement, the US development programme, which lagged Europe by about a year, had had a 60-patient trial underway, with positive results expected in the first months of 2004. The market was agog.

Credit Suisse First Boston had conservatively predicted global sales of Varisolve of US\$345 million five years from launch, valuing Provensis alone at 520 pence (approx. US\$7.50) a share (BTG had been trading at around 385p immediately prior to the FDA-linked announcement). BTG, which had invested £35 million in Provensis (courtesy of a £122 million rights issue in 2000) and its investors looked poised to profit handsomely from the commitment it had made to this breakthrough technology.

## **An eye on the market**

Speaking from BTG's London offices, Andy Burrows, the company's director of investor relations, was keen to put recent developments into perspective: "At this stage, there is no reason to assume that this [the FDA's suspension] will affect Varisolve's longer term development. Once we have received the FDA's written communication on this, we'll be able to make an informed decision on the work needed to generate whatever additional data the FDA requires, as well as to tell our investors what effect this will have on the timeline for Varisolve's development in Europe and the US."

Burrows goes on to stress that this setback, although clearly significant, is nothing more than a predetermined scheduled review of the US trial, rather than any urgent safety matter: "Clinical holds and partial clinical holds are a fact of life – but because we've been playing out these developments in the public eye, and because biotech investors are very twitchy right now, the effect has been quite dramatic. The market always tends to overreact in the short term – longer term, however, it usually gets it right."

The story of Varisolve has much to tell

about the way BTG has focused its efforts on IP commercialisation, and the very substantial commitment it is prepared to make to some breakthrough technologies. It also turns a spotlight on the problems facing an IP commercialisation company that puts its head above the parapet by investing heavily in a new technology. Remember, BTG has over 250 technologies in its portfolio, from semiconductor and nanotech opportunities, to oncology and coagulation treatments. The range of its activities, and the problems investors have with classifying them, accounts for its classification in the Support Services sector of the FTSE-250, where analysts are forced to compare it with the likes of Rentokil, Securicor and DeLaRue. The fact that none of these have anything in common with BTG's activities underscores the challenges facing a business that, most commentators agree, is breaking new ground in the IP field.

**A history of commercialisation**

The history of this company makes interesting reading, marking as it does the intensifying focus on intangibles as a source of value and competitive edge. BTG (known as British Technology Group before its 1995 flotation) traces its roots back to the National Research Development Corporation (NRDC), launched by the British government in 1949 to protect the IP rights of British inventions developed with public funds. Stung by the experience of Alexander Fleming who, having discovered penicillin in 1928, failed to patent it – enabling US companies to patent it instead, the NRDC was involved in the development and patenting of a number of new pharmaceuticals and insecticides throughout the 1950s and 1960s.

In 1981, the NRDC merged with the National Enterprise Board to form the British Technology Group. At that time, the government planned to privatise the state-owned company as soon as possible, although it was not until 1992 that this took place.

Significant phases in BTG's development were to follow. In 1984, the company helped to develop and patent magnetic resource imaging (MRI) – a continuing source of revenue, bringing in £98m for BTG between 1981 and 2003. In 1987, the company bought the traction control and transmission research arm of the Rover Group, naming it Torotrak. Its first overseas office was opened in Philadelphia in 1990 and in 1992 a management and employee buyout finally took the company private. It went public in 1995 and since then has endured something of a rollercoaster ride – first attempting to manufacture auto transmissions itself (at great expense), before spinning off Torotrak as a public company in 1998. Looking to streamline its activities and raise its game in an increasingly fast-moving market, BTG reorganised in 2000, integrating its Medical and Physical Sciences division into two new divisions (electronics, engineering and IT and Health, Medical and Biological Sciences).

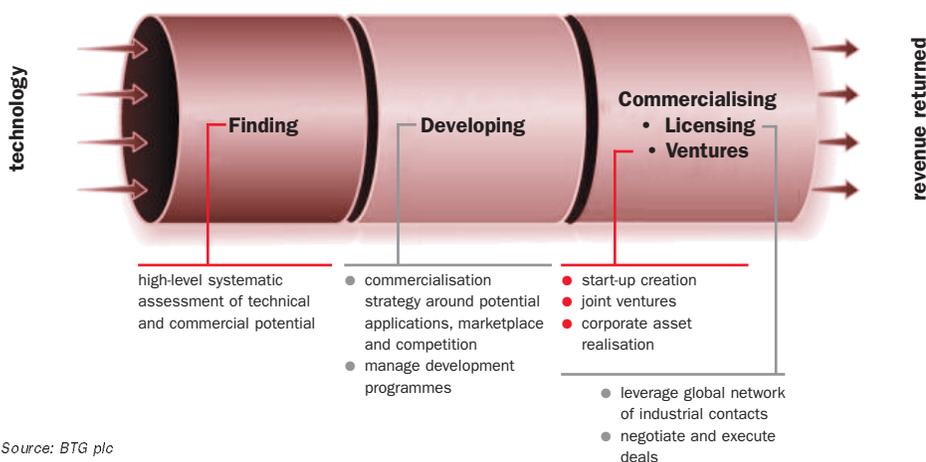
**Communicating performance**

A key issue for BTG (and other companies playing the field in what are, first and foremost, extremely volatile markets) is just how to communicate meaningful long-term performance predictions to the market. By definition, major new drugs and new technologies are breakthrough events – when they happen, they generate huge publicity and revenues to match, but their arrival can hardly be predicted with any accuracy. And, at the same time, milestone payments in the revenue line from existing products that may have been out-licensed and/or marketed can be lumpy. With 250 technologies in its portfolio, BTG has its work cut out if it is to isolate the best bets for long-term value and promote these to an investor universe that hankers after solid predictions.

The lack of predictability – and the pace of convergence and breakthrough developments – in all the markets where BTG operates also raises real questions for the way in which the company was structured. This realisation lay behind the radical restructuring the company initiated in December 2002 – as BTG's COO, Tony Lando, explains. "If you look at BTG prior to 2002, we were dominated by a quango mentality, with various functional groups handing off to each other as the technology moved through the pipeline," he says. In the early 1990s, Lando continues, the company had seen an opportunity to grow its business in

**BTG's business model**

Finding, developing and commercialising technologies that will shape the markets of tomorrow



Source: BTG plc

a number of areas. It was not a problem funding or developing this growth – but maximising its potential was becoming difficult. “We had, at that stage, 25-plus focus areas, so it was hard to get traction. Basically, we were placing a lot of small bets instead of taking time choosing the right bets and investing appropriate levels of money in them,” he says.

Lando goes on to underline the rationale underpinning the recent restructuring. “It was clearly time to focus on our core activity – investing time, money and resources in the development and commercialisation of new technologies. We wanted a business where performance was more transparent and cross-subsidisation was minimised,” he says. Previously BTG had split its activities into Acquisition, Development and Commercialisation, Lando explains, with industry specialists working within each of those three main areas. After the restructuring, the company now has streams of workflow that connect directly to the inventor and the customer. All its people in each business unit are multi-disciplinary which means they are well-equipped to make connections quickly. “We can now use the same metrics across each of the main business units to assess performance. Really, we took BTG and put it on an Atkins diet with the goal of delivering value to our shareholders,” Lando concludes.

Key to this restructuring, which cut headcount by 30% and saved £6 million in annual costs, was the company’s willingness to take a long hard look at all its areas of business – and inevitably this meant exiting some of them. For example, the company had

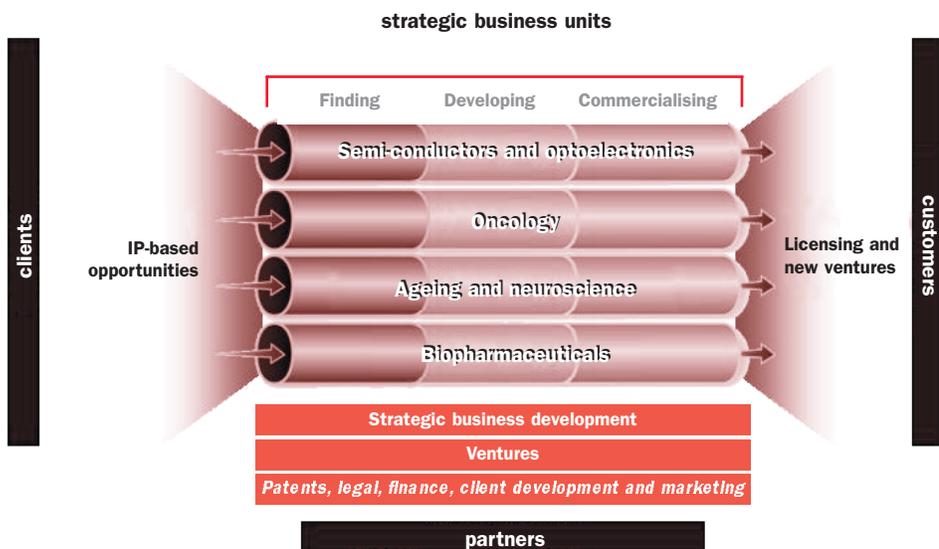
been chasing crop protection technologies for 30 years, but a cold assessment of that sector led to the conclusion that the mid/long-term prospects for success looked poor. Resources were shifted into oncology instead. “We take time to understand our markets and then line that understanding up with whether there happen to be technologies within them that we can commercialise,” Lando explains. It is rare, he says, to find existing IP that does not need some development (tightening the portfolio, dealing with ownership issues, assertion, for example) and this development is partly tactical and partly strategic. “For example, we may need to target the right technology with a patent filing strategy to open up new market opportunities. Commercialisation can then take place through licensing, sale or auction. It may mean starting a new company around an existing technology, as was the case with Varisolve, or it may mean litigating, where we are asserting an established position in the marketplace,” Lando says.

**Definition made simple**

To the outside observer, BTG can be a difficult species to define. It has a venture capital arm, it has a thriving out-licensing operation, it maintains a 15-strong in-house team of (reputedly extremely tough) lawyers that handles much of its contract drafting and due-diligence, relying on external IP litigators for its assertion activities. As well as this, it sets up, where appropriate, wholly-owned subsidiaries to develop and commercialise stand-out opportunities. But broken down, the company’s aims are simple enough. It identifies interesting technologies (with approximately half coming from universities and research institutes and half coming from businesses), acquires the rights to them, develops them and licenses them on. Of the technologies currently in its portfolio, approximately two-thirds are biotech products and the remainder are high-tech (divided into various categories including semiconductor technologies and telecommunications). The company holds over 4,000 patents and patent applications covering around 250 technology families. This portfolio is diversified by technology type, stage of development and geography – thereby spreading the risk in commercialising innovation. Experience to date adheres to the time-honoured 80/20 business equation – 20% of its licensed technologies can be expected to make real money and 80% tick over: between 80% and 90% of the technologies that it first acquires fail to reach the market.

Notwithstanding this apparently high failure rate, the selection process for new technologies is nevertheless rigorous – BTG

**BTG’s operating structure**



Source: BTG plc

## A tough one to value

The market's reaction to Varisolve being placed on clinical hold by the FDA is a graphic example of the challenge facing BTG when it comes to communicating value meaningfully. Andy Burrows, the company's director of investor relations, believes there are significant issues involved in promoting this sort of business model to the investment community. Specifically, there are very few other companies with which BTG can be compared. "Markets do tend to be quite herdish – they like momentum, and they like to be able pick from a number of broadly similar companies in the same sub-sector," he says. On top of that, Burrows continues, the diverse nature of the IP assets BTG develops and commercialises means that they span various sectors, from life sciences to semiconductors, and from oncology to internet technology. "Because we have to get involved at an early stage if we're to extract value, it means that many of the established valuation methodologies just don't make sense in our case. On top of all this, the market's knowledge of IP is still in evolution and this can make it hard for us to find analysts with enough know-how to benchmark us," Burrows concludes.

Burrows stresses that a major part of his brief is to cut through the complexity of BTG's business and to make it easy to understand. "One of the most useful things we've done is to differentiate ourselves from other companies in the high-tech and life sciences fields," he explains. As a result, Burrows says, investors now appreciate that BTG is not asset-based but instead operates on a virtual basis. "We've had to work hard to make them understand that the IP we acquire is only one part of the value creation story. We also have to have technical appreciation and calibration skills, market understanding, long-term vision and commercial skills. We're battling to make investors realise that we're a long-term business – we point them to Acambis [see below] and hope that they can see the significance of that sort of outcome to our wider business model," Burrows says.

Genghis Lloyd-Harris, managing director in equity research covering European biotech and specialty pharma at BTG's broker Credit Suisse First Boston, understands BTG's predicament. "In the past, the company has fallen between two stools – back in 2000 it was reckoned to be more tech-based and now it is more skewed towards pharma/biotech. On top of that, Varisolve's potential means that the market tends to see it in two parts – Varisolve/Provensis and BTG ex-Provensis – notwithstanding the fact that its portfolio is

much, much wider than that would suggest," he says.

From an analyst's perspective, this raises some specific issues. "When one is assessing projects that are late-stage, it is possible to make meaningful projections," says Lloyd-Harris, who was ranked first amongst analysts for pan-European biotechnology in 2001, 2002 and 2003 in surveys conducted by *Institutional Investor* magazine. The same, he adds, holds true where royalty streams are already established. But with early-stage companies there are real valuation problems. With a discounted cashflow analysis, which predicates discounting forward for so many years with compounding of interest working in reverse, the projected cashflows shrink to small, or even negative, levels. Alternatives, therefore, are to use either real options, which use binomial theorem to value biotech R&D, or to approximate that methodology using the nested Black Scholes model. "Both are very complex, however, and too unwieldy for most investors," he says.

For that reason, Lloyd-Harris and his team have adopted a separate approach to valuing BTG ex-Provensis. "In our view, BTG has a plethora of exciting biotech, medtech and high-tech products and projects, which suggests to us that one way to value the company (ex-Provensis) is to use a multiple of sales that implicitly assumes a continuing "engine" for growth," he explains. For example, the Lloyd-Harris team will assume orthopaedic companies trading at EV/sales multiples for 2003 of five times, and US large-cap biotech companies trading at more than eight times, have productive R&D efforts. If they then apply these multiples to BTG ex-Provensis, the implied valuation would be £160 million to £256 million, or 155 pence to 248 pence per share (assuming 105 million shares outstanding). "We have used total revenues in our calculation, rather than calculating net revenue after revenue-sharing agreements (RSAs). We believe this is appropriate because we view the RSA as similar to COGS for typical companies," Lloyd-Harris explains.

He concedes that this methodology misses out on the substantial upside opportunities that still exist in the BTG portfolio. In particular, he points to the potential for substantial revenues residing in the Teleshuttle and Celltrace patent portfolios: plans to commercialise the former are ongoing, with formal grant of the key patent covering remote updating of software over the internet having been received in the US; while the latter, which allows for the remote updating

of SIM cards in mobile phones, represents a major patent assertion opportunity. Both, in Lloyd-Harris's estimation, have the potential to generate very significant revenues (in the US\$100 million to US\$150 million range).

Referring to the recent Acambis settlement (where BTG benefited from a £12 million out-of-court settlement, recognising its claim to 2% of the vaccine maker's revenues under a 30-year agreement with Peptide Therapeutics, now part of Acambis), Lloyd-Harris highlights another of BTG's unique strengths. "You have to remember that few companies can compete with the commercial savvy of BTG's in-house legal team. That's a big part of the reason why the company manages to secure such strong, and potentially lucrative, contractual positions," he says. Acambis is just one example, Lloyd-Harris claims. MRI, Teleshuttle and Varisolve are three more.

It is clear to Lloyd-Harris that BTG still has real growth potential and that Varisolve will continue to play a part in this: "In our opinion, US clinical trials of Varisolve are likely to be delayed six to 18 months. We believe this is just a delay and not the 'death' of the product. We show a US launch in 2008 (previously 2006). European approval is unlikely to be affected – the FDA is sometimes considerably more demanding than its EU counterpart, the EMEA. The FDA's action is, however, likely to delay a joint venture, IPO and/or fundraising for Provensis. In our model, BTG runs out of cash in March 2005 unless it has previously partnered, sold or spun-off Provensis. We think BTG could possibly be pushed toward a joint venture or sale of Provensis. We value BTG ex-Provensis at approximately £2.00 per share, although this appears highly conservative compared to the value of recently-floated IP2IPO."

Lloyd-Harris concludes by admitting that, when it comes to valuing IP-centric businesses, opinions vary enormously. "It's fair to assume that all analysts in biotech and pharma are pretty switched on to the importance of patents – but it is often a matter of debate just how important they are in individual cases. Remember that if you talk to two different patent attorneys, you tend to get two different answers – and then remember that, in the current climate of cost-cutting that prevails on Wall Street and in the City, few analysts have budget to go out and get legal opinions in any event. This adds to the subjectivity in what is, by any standards, already a very subjective business."

### The IP evangelist – Ian Harvey, CEO, BTG plc

Arriving for the interview straight from an IPAC meeting (the UK government's Intellectual Property Advisory Committee), Ian Harvey wastes little time setting out his stall: "The lack of know-how around IP here and in the US is still a key issue. I believe that companies can only become more successful if they really do incorporate IP into their overall business strategy." Warming to the subject, Harvey, who has the soft-spoken intensity of a true evangelist, continues: "In the course of one deal a couple of years ago, chatting to the general counsel of one of the banks involved, we were finding it very hard persuading him that IP awareness could make much difference to his own business. We highlighted the business method patents that could close the bank down and showed how its existing e-business operations could be licensed out to generate unrealised value from gaming applications." He concludes, smiling: "It was quite an eye-opener for him."

This example pleases Harvey, illustrating as it does the threat to business posed by IP ignorance and the opportunities that come from even a rudimentary understanding of its commercialisation potential. "Understanding how an IBM-style out-licensing strategy can benefit the business means taking the time to identify what technologies are coming through and where the best fits might be," he says. To do this, Harvey explains, takes capital, resources and insight – none of which will be available unless IP has been fully incorporated into medium and longer-term strategic thinking. "In this frictionless world, where it's increasingly impossible to compete on price or first-mover advantage, one of the key advantages is whether or not IP rights can be enforced. That's competitive advantage to die for and the companies that realise this are the ones that will prosper," he adds.

And while conceding that his shareholders have begun to see the light in recent years, he goes on to say: "I have a standard question that I ask CEOs – what's the difference between patentability and freedom to use? 90% of them don't know the answer. That's worrying. If you're running a business today, even if you don't know the answers to fundamental IP issues, you have to know enough to be able ask the right questions."

Harvey goes to some lengths to underline the fact that BTG, while clearly beholden first and foremost to its shareholders, is nevertheless proud of the part it has played in



bringing new medical technologies through to the market (not long before the interview, Professor Sir Peter Mansfield and Professor Paul Lauterbur had been awarded the Nobel Prize for Medicine for their work in MRI, which BTG helped to develop back in the 1980s). "Partly because of Bayh-Dole and partly because it offers a less entrepreneurial environment, the UK still lags the US where tech-transfer is concerned," Harvey says. The United Kingdom, he claims, lacks both entrepreneurs and angel capital – although there's no shortage of funding for later-stage opportunities, there is a real gap in the £50,000 to £250,000 funding space. "Right now, BTG generates one-third of all the revenues that go into the UK university sector – our preparedness to get involved in early-stage technologies means that we're filling a lot of that development gap ourselves," he says.

Harvey has been a lynchpin of BTG's progress from state-owned entity to publicly-quoted company. He led the management buy-out that took BTG private and has been a driving force behind its subsequent restructuring, £122m rights issue and decision to go all-out on Varisolve by setting up the Provensis subsidiary. Over the last 30-plus years, BTG has had an interesting journey and Harvey has experienced the company's high and low-points over that time. For example, the UK government-led decision, in the early 1970s, to have BTG concentrate on the underperforming businesses in its portfolio, rather than focus on technology transfer, was to seriously weaken its pipeline for future commercialisation. "It meant that BTG lost money and stopped bringing through new technologies. This created a 15-year bubble in the pipeline, with only MRI as an ongoing project. We knew that eventually we'd fall off a cliff – and we did," he says. By the time the company floated 10 years later in 1995 it had 40 technologies equivalent to MRI – but, had the UK government not put the brakes on tech

transfer, it might have had a lot more.

One of these technologies was Campath (now also in large-scale trials for its application to other indications, including multiple sclerosis), the cancer therapeutic licensed to ILEX Oncology which generates in excess of £4m in annual revenues for BTG. Harvey takes up the story. "If we hadn't been there in the first instance, to take the technology from Cambridge University and license it to the Wellcome Foundation, it would have died," he says. Harvey explains how, having licensed the technology, Wellcome went cool on its profile and killed the project. BTG, which was entitled to the proprietary data under the terms of the licence agreement, spent some time reassessing the technology and repackaging it, ultimately leading to ILEX becoming sole licensee.

With total annual revenues to 31st March 2003 of just £31.5m, BTG remains a loss-making business (the restructuring is geared to achieve profitability for the business in 2006), but Harvey remains optimistic. "We're now developing significant revenue streams for institutions and investors. Campath is a classic example of what we do – and we can keep doing it across all our business units," he says.

And of course, there is Varisolve – so significant to BTG that (even after the FDA's shock announcement) analysts treat BTG as two separate entities – Provensis and BTG ex-Provensis. For Harvey, Varisolve highlights the random nature of invention – and explains the presence of the floating business unit in the restructured company (the Strategic Business Development Unit), which exists to identify and commercialise breakthrough technologies outside the four focus areas. "Had our restructuring limited us to just these four principal areas of business, we would have missed out on Varisolve. Disruptive or transformational technologies cannot be predicted – we were out in Spain looking for new cancer technologies when our lawyers alerted us to one of their private clients who had technology that needed investment. It was very unexpected. If we'd been actively looking for radical new varicose vein technologies, we certainly wouldn't have been looking for them in Granada. Paradigm shifts typically originate from outliers – and we just happened to be in the right place at the right time."

assesses upwards of 400 new technologies each year, accepting 100 or less. It then files and/or often prosecutes patent applications to protect these inventions, markets the technology and promotes and negotiates licensing agreements with manufacturing companies. Central to the success with which it is able to execute this strategy is a mix of patenting, legal, financial and marketing expertise. Of the company's 160 employees, approximately half are based in the UK and half in the US (central to its strategy is the conviction that its people must be close by the main sources of technology). It also maintains a representative office in Japan. Where appropriate, it works with development partners (DPs) to leverage market insight, contacts and commercialisation opportunities. The Semiconductors & Optoelectronics Business Unit, for example, works with four or five DPs, including Semiconductor Insights (for semiconductor opportunities), ITRI in Taiwan (for polymer opportunities) and Lund University in Sweden (for nanotechnology opportunities). These DPs take a stake in the revenues flowing from the technologies.

### Strategic thinking

Crucial to understanding the new-look BTG is some assessment of the Strategic Business Development Unit. This unit floats outside the four core areas and was specifically developed to commercialise opportunistic technologies which collectively constitute around half the blockbuster technologies in BTG's portfolio. Mark Chandler, who heads the unit, explains. "The targeted business groups have real technical depth. We look at ourselves more as dealmakers than as technical experts – we're very flexible, so we can take on complex one-off deals," he says. The importance attached to Chandler's team underlines the fact that an IP commercialisation company can never become over-structured – many of the most valuable technologies have their roots in uncertainty.

The group's leads come from law firms, private equity and venture capital groups, investment banks and consulting firms, and it partners with these organisations to explore opportunities. According to Chandler, such an approach has a number of advantages. "It brings us highly pre-qualified leads (if we need technical depth, we can always hire in an expert); law firms refer areas of litigation to us and venture firms turn to us with underperforming assets. We can do all this because we're not looking at industries in any targeted way," he says. By way of example, Chandler cites BTG's ownership of the IP for web navigation history tracking, and for MESNA (the so-called Chemical Scalpel), as well as

the successful expansion of the scope of the approval granted by the Environmental Protection Agency for Active-OX™, paving the way for two US licensees to expand their product offerings and sales efforts.

Chandler stresses the fact that his group gets involved in potential ventures long before a typical VC would dream of doing so. Around 20% of its total activity is in the pre-seed phase, whilst another 20% focuses on IP-based partnerships and the remainder is around technology licensing and assertion plays. "We always look to be either the principal, owning the technology, or to provide the IP know-how and advise on packaging the technology to make it attractive to VCs. In point of fact, we're one of the few institutions right now that will invest at the pre-seed stage. There's a gap there and we're doing our best to exploit it," Chandler says.

This unit is also responsible for testing market appetite for BTG internal processes that can be licensed out and/or commercialised. In this regard, it recently launched a product in the royalty auditing space: the product, TT Solutions, enforces compliance on behalf of US universities and, where there is a successful outcome, splits the proceeds with them.

### The final analysis

Whatever the outcome of the FDA's clinical hold on Varisolve in the United States, the company is unlikely to deviate from its central strategy. The ability to pursue such a wide range of IP commercialisation strategies across so many industry sectors is a unique one. Competitors in the market tend to be both much more industry-focused, and much less full-service. The fact that BTG has 160 employees working internationally on technology transfer, assertion and venturing puts it in a league of its own. So too does the company's 50-year track record.

The market's reaction to Varisolve is unlikely to weaken the company's commitment to identifying and commercialising new technologies. As Andy Burrows concludes: "Financial institutions like to value opportunities that are easy to categorise – like Varisolve. And, of course, this can be a problem – amongst all the extraordinary opportunities in our portfolio, there is always the potential for just one dominant technology to mask all the others. Investors need to become a little more flexible in their outlook. Existing quantification measures will greatly undervalue what is now being created in early-stage IP-based operations." ■

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