ALIGN
RESEARCH

DGI PLC (formerly Path Investments Plc.)

8th April 2022

Novel motor and energy storage business set to benefit from huge growth in demand for emissions reducing technologies

Path Investments has completed the reverse takeover of DG Innovate Limited (now renamed "DGI PLC"), an advanced research and development company focusing on novel electric motor technologies and energy storage solutions. Working with a range of partners, including major transport and energy companies, research bodies and the UK government, DGI PLC is currently moving to the commercialisation stage of its development, developing products with applications across a range of end uses.

£4.6 million raised to advance towards first significant product sales

DGI PLC will now be focused on the development and commercialisation of its technologies. Its strategy is to evolve from being an R&D business into a Tier 2 supplier and/or technology licensor to the electric mobility and energy storage industries. To fund this, £4.6 million has been raised via a share subscription and warrant exercises.

Enhanced Drive Technology - EDT

DGI PLC is developing multi-platform, ultra-high efficiency, compact, cost-effective electric motors and electronics which have applications across a range of markets. The company has focused on developing electric drive systems which aim to deliver improved performance and range over existing technology by reducing energy losses and improving efficiency. Simulations have shown these can increase the range of a leading passenger EV by up to 25%, from the same battery pack.

Enhanced Battery Technology - EBT

DGI PLC is developing fully-recyclable, sodium-ion (Na-ion) batteries using anode active materials as a key enabling technology. The intention is to offer comparable or greater energy density to incumbent battery technologies (such as lithium and lead based) at a lower cost and with reduced environmental impact. A pilot scale pouch cell production line was recently built and will allow the manufacture of A5 size cells for testing.

DCF analysis shows significant upside if product sales ramp-up as planned

Our DCF analysis shows that DGI PLC's business model looks to be potentially highly profitable. We see a significant scale up in product sales from 2025, with EBITDA margins in the mid-40 per cent level leading to strong cash flow. Discounting at a rate of 20% we derive a value to equity holders of £156.43 million. We initiate coverage of DGI PLC with a target price of 1.192p and a stance of **Conviction Buy.**

This investment may not be suitable for your personal circumstances. If you are in any doubt as to its suitability you should seek professional advice. This note does not constitute advice and your capital is at risk. This is a marketing communication and cannot be considered independent research.

CONVICTION BUY

Price target –1.192p

INNOVATE

Key data

EPIC	DGI
Share price	0.5p
Listing	Official List - Standard
Shares in issue	8,842,715,107
Market Cap	£44.2m
Sector	Alternative Energy

Analyst details
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IMPORTANT: Path Investments is a research client of Align Research. Align Research own shares in Path Investments. For full disclaimer & risk warning information please refer to the last page of this document.

Corporate Background

Path Investments PLC was previously a cash shell which listed on the Main Market of the London Stock Exchange in March 2017 with a strategy to acquire energy assets. The company then raised £3.85 (gross) million at 0.25p per share to finance its activities in March 2021.

DGI PLC transaction

On 13th August 2021 Path announced that it had entered into a conditional sale and purchase agreement to acquire 100% of DG Innovate Ltd, an advanced research and development company focusing on novel electric motor technologies and energy storage solutions. The shares were temporarily suspended from the date of the announcement, with the transaction classed as a reverse takeover under the LSE rules. Consideration for the deal was set at just over £32 million, paid for by the issue of 5,397,451,305 new shares in the company at a price of 0.6p each. A further deferred consideration of £5.4 million, to be satisfied by the issue of 895,610,844 additional shares on the first anniversary of completion, will become payable should the company sign one or more supply agreements prior to this date with a combined potential value of £5 million or more.

At the time of the initial announcement, Path agreed to provide a secured loan facility to DGI PLC of up to £600,000, with an initial £300,000 provided on signing of the agreement. The remaining £300,000 was provided in September 2021. A further £450,000 loan facility was agreed in February 2022.

The relisting on the LSE was completed on 8th April 2022, with Path Investments changing its name to DGI PLC to reflect its new operations. Following completion, the company is focused on implementing its business plan for the development and commercialisation of DGI's novel electric motor and energy storage technologies. To fund this, as part of the relisting process the company raised £2.55 million at a price of 0.5p per share via a subscription for 510 million new shares. In addition, warrant exercises raised a further £2.077 million.

The net proceeds from these, along with the existing cash in Path, will be employed for working capital purposes including: increased commercial efforts, admin expenses, investing in new R&D staff, development costs and capex, with £0.8 million being used to pay back certain DG Innovate Ltd. loans and interest. **Overall, the acquisition and associated funding is expected to provide the basis to develop DGI PLC as it advances further towards product commercialisation in the short to medium-term.**

INNOVATE

Operations Overview

DGI PLC was founded in 2009 by engineer and inventor Martin Boughtwood. With its main facilities in Caerphilly, Wales, the business is an advanced research and development company focussed on making sustainable and environmentally considerate improvements in the two areas of electric drive technology and energy storage. Working with a range of partners, including major transport and energy companies, research bodies and the UK government, DGI PLC is currently moving to the commercialisation stage of its development, developing products with applications across a range of end uses.

The business operates from a 6,000 square foot research and development facility in Caerphilly which has features including a clean room, dedicated high voltage test safe area and a prototype construction and battery pack assembly facility. Currently, 17 staff are employed, with the highly educated team (including five PhDs) having a mixture of electronics, software and mechanical engineers and materials scientists. The business currently focuses its R&D on the two areas of novel electric motor technologies and energy storage solutions (discussed in detail on pages 6-11).

DGI PLC has historically utilised tens of thousands of hours of high capacity super-computer processing and modelling capability at HPC Wales, one of the UK largest high-performance computing centres. In recent years, DGI PLC has contracted Exeter University to progress its atomic scale simulation and analysis enabling the company to compete globally for research and innovation that requires state-of-the-art computing facilities to simulate and solve complex scientific problems.

Funding

To date DGI PLC has financed its activities via a mixture of equity, debt, grant and research funding. Prior to the reverse takeover, equity funding brought in c.£2 million via three main rounds. Loan funding meanwhile has come from shareholders, the Coronavirus Business Interruption Loan Scheme and the loans provided by Path Investments prior to completion of the reverse takeover.

Grant and research funding has been more significant, with grant funding of c.£0.8 million received from the Welsh government, and a total of c.£2.3 million (with c.£0.3 million outstanding) from development agency Innovate UK under its Faraday Challenge and Automotive Transformation Fund. Faraday Challenge is a scheme supporting new research projects to improve the safety of batteries for use in electric vehicles and as stationary power sources. The biggest source of funding has come from UK Government, with c.£10 million provided through two contracts signed in 2013 and 2014 for research into electrostatic motors and energy storage, along with other government contracts to the value of c.£2.0 million.

Prior to the reverse takeover, technology development funding for DGI has been staggered and uncertain in terms of timing. Following the associated fund raises the cash position of the wider group is expected to provide sufficient working capital to undertake DGI PLC's planned development work, cover overheads and required capital expenditures through to the signing of initial supply agreements.

Patents

Over the past five years DGI PLC has protected its intellectual property by filing a number of patents in seven key markets around the world - UK/Europe, North America, China, Russia, India, Japan and Brazil. To date, 11 patents have been granted, with a further seven pending and a number of drafts under consideration. Patents include for a novel electric motor and corresponding architecture along with energy storage apparatus, an advanced stabilised ring drive for marine applications, a suspension system, more novel motor arrangements and a vacuum cleaner.

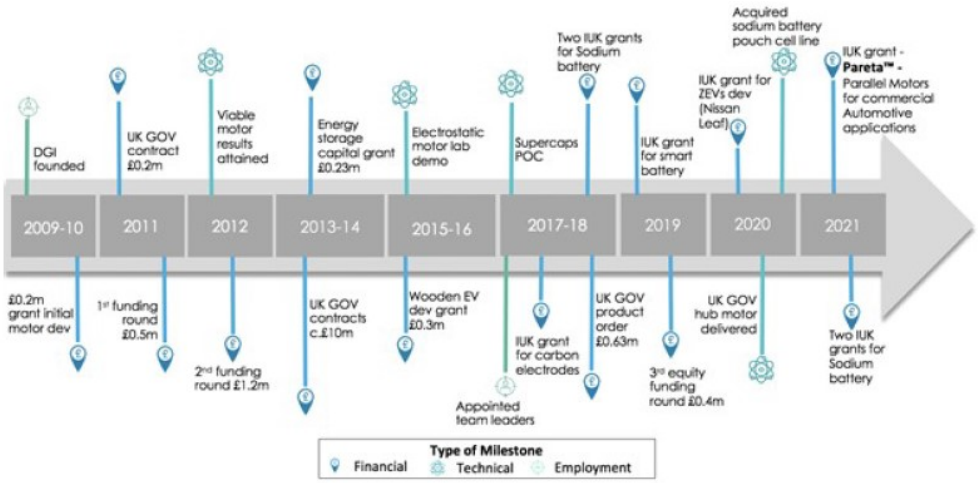
Patent	Patents Granted	Patents Pending	Total
Electrostatic Motor	1	-	1
Commutator	1	-	1
Controller	1	-	1
Torsion Device	5	-	5
Vacuum Cleaner	2	-	2
Energy Storage Apparatus	1	-	1
Suspension System / Dual-wheel Module	-	2	2
Motor & Drive Arrangement	-	3	3
Low Reluctance Motor / Generator	-	1	1
Electric Motor System	-	1	1
Total	**11**	**7**	**18**

DGI PLC patent status. Source: Company

Milestones

Since 2009, DGI PLC has achieved a number of milestones, further advancing its technology towards workable applications in commercial products. Early results proved the viability of its electric motor concept in 2012, with a laboratory demonstration of the motor in 2015, first proof of concept with the delivery of new supercapacitors to the UK government in 2017 and the first successful lab demonstration of a hub motor in 2020. Alongside numerous development projects DGI PLC is also currently working towards the integration of its electric drive systems into an existing all-wheel drive UK government vehicle with a view to testing and, on declaration of commerciality, retrofitting some of the UK existing fleet.

In 2013, DGI PLC commenced its energy storage research activities. In 2018, the Company began to develop its fully-recyclable, sodium-ion (Na-ion) batteries using anode active materials as a key enabling technology. With grant support from Innovate UK, the company completed installation of a pilot scale pouch cell production line in early 2021, which will allow the manufacture of large format cells in commercially relevant packaging.



Key milestones. Source: Company

Product Development

DGI PLC is currently developing a range of products alongside partners including major transportation and energy companies, research institutions and the UK's Ministry of Defence. These products, which are nearing field trials and commercial deployment, include a range of novel electric motors, generators and advanced control systems, as well as materials for supercapacitor and battery systems.

Enhanced Drive Technology (EDT)

DGI PLC is developing ultra-high efficiency, compact, high reliability, cost-effective electric motors and electronics which have applications across a range of markets. **In this business segment, the company has focused on developing electric drive systems which aim to deliver improved range over existing technology, based on the same battery capacity, by reducing energy losses and improving efficiency.**

Background

To get an idea of the potential of the company's technology it's good to have a basic understanding of how electric vehicles (EVs) work. Put simply, an electric vehicle is powered by an *electric powertrain*. They are used instead of the internal combustion engines (ICEs) seen in liquid fuel powered vehicles. The powertrain contains the set of components that generate the power required to move the vehicle. It contains a number of key parts including the *battery*, which stores the energy needed to run the vehicle, power-*electronics, software* and *electric motor*. The power-electronics in an EV (the *inverter),* is a device that converts DC power from the battery to the AC power used by the motor. The inverter can change the torque and speed at which the motor operates by continually adjusting the magnitude and frequency of the alternating current.

The job of a motor in an electric vehicle is to convert electrical energy (from the battery, via the inverter) to drive the vehicle's wheels through the application of torque (rotational force). Typically, motors work through the principles of electromagnetism and have two critical components; the *stator* – static electro-magnets; and the *rotor* mounted on a rotating axle. The coil becomes an electromagnet when current flows through it, with the attractive and repulsive forces of electromagnetism causing the rotor to spin continually as long as it receives a steady and controlled flow of electric current. The rotor is connected to the wheels and hence moves the vehicle.

DGI's focus has been upon addressing one of the main challenges in electric mobility; the *range* that EVs can travel before the battery needs to be recharged. As well as battery capacity, range is determined by powertrain efficiency. DGI has concentrated on improving both these fundamental factors.

Technology

EDT is a **platform technology** based on novel motor and power electronics' architecture. Its key differentiators aim to reduce *copper losses* in the motor and improve reliability. The term copper losses refers to the energy dissipated (and therefore lost) by resistance in the copper wire used to wind a motor coil. EDT achieves a reduction of copper loss via a number of innovations including a novel shortening of the length of copper coil wire in the motor; multiple parallel power electronics architecture; changing or duplicating the location of the permanent magnet; and elimination of the need for permanent magnets by novel magnetic circuit design.

As a result, EDT is able to run at lower voltages (as low as 50V instead of 400-800V), with reduced heat dissipation and together with better cooling, delivers advantages in terms of motor performance, reliability, and safety compared to existing solutions. This provides EDT with very low thermal constraints, enabling continuous operation at maximum power. The high motor efficiency across a large part of the speed/load range enables more miles from the same battery compared to more conventional motors.

Overall, a key benefit of EDT is increased energy efficiency in an electric vehicle. This was demonstrated in recent simulation which predicted that the system increases the range of a passenger EV by up to 25% from the same battery pack, depending upon the drive cycle the vehicle travelled.

Applications & Projects

EDT is currently at a Technology Readiness Level (TRL) of 4. This is an Industry-Standard ranking system used to assess the maturity level of a particular technology, with level 4 suggesting indicating a prototype has been demonstrated in a test or operational environment, with performance demonstrating the viability of the technology.

As a platform technology, DGI PLC sees applications for EDT across a number of industries, with the technology offering multiple benefits across a range of sectors which use electric drive systems. These sectors include automotive, aerospace, marine and energy in multiple vehicle types including passenger cars, buses, pick-up trucks, helicopters, ships, submarines and wind turbines.

The company is currently working on a number of projects for the application of EDT, with a focus on the commercial and defence automotive sectors, where product orders and other pre-order enquiries have already been made. Key partners include the UK government (Ministry of Defence), a major tier 1 supplier to commercial vehicle sector and a zero-emissions marine manufacturer.

With internal product testing at an advanced stage and external client testing expected within 2022. Some of these projects include:

UK Government/Ministry of Defence - DGI PLC has developed, with MoD funding, an electric hub motor, inverter and vehicle controller for potential use in the UK government's fleet of all-wheel drive vehicles. Internal testing has been completed and four units have been delivered to the MoD for integration into an initial vehicle ahead of testing, which is expected to commence during 2022. Upon successful completion of field trials there is the prospect of further new vehicle drivetrain orders and potentially retrofitting existing all-wheel drive vehicles. We understand that this particular deal has a high potential for significant near/medium-term product sales.

UK government C3 motors and inverters on test. Source: Company

Tier 1 supplier to commercial vehicle sector JV - Discussions are underway with an un-named major global Tier 1 supplier to commercial vehicle OEMs which manufactures powertrain components, with the aim of incorporating the system in its future electric drivetrain solution.

Marine drive - Discussions are underway with large scale marine drive projects to enable significant reduction in emissions and energy consumption.

Enhanced Battery Technology (EBT)

In its second business segment, which started in 2013, DGI PLC is developing fully-recyclable, sodium-ion (Na-ion) batteries using anode active materials as a key enabling technology. The intention is to offer comparable or greater energy density to incumbent battery technologies at a lower cost and reduced environmental impact. **The company is currently developing a safe and environmentally friendly storage cell using non-toxic and non-rare earth materials, with the target of the displacement of lithium batteries with a safe, non-toxic sustainable alternative.**

Background

According to the International Energy Agency, global sales of electric vehicles increased by 41% to c.3 million in 2020. It estimates that the number of EVs registered around the world will increase from c.10 million today to 145 million in 2030. Meanwhile, an October 2021 report from Fortune Business Insights is looking for the global electric vehicle market to grow from a value of $287.36 billion in 2021 to $1.312 trillion in 2028, growing at a CAGR of 24.3%.

The advancement of the electric vehicle market has had a knock on effect for lithium, with the metal being a core component of the lithium-ion (Li-ion) batteries used to power electric vehicles. In fact, lithium-ion batteries have captured pretty much all of the EV market, as well as being used in many other technology applications. A July 2021 report from analysts at ResearchAndMarkets suggested that the global lithium-ion battery will grow from $41.1 billion in 2021 to $116.6 billion by 2030, growing at a CAGR of 12.3%.

While having their advantages, including having the high energy density that electric vehicles require, there are also many problems with Li-ion batteries. These mainly relate to high costs, fast ageing and sensitivity to high temperatures. The mining and use of the raw materials in the batteries has also come under criticism due to environmental and other ethical concerns. EVs themselves may be seen as being environmentally friendly but the way they are powered and constructed leaves a lot to be desired.

For example, extracting the raw materials used in Li-ion batteries (including cobalt) requires large quantities of energy and water. This is especially so in the salt flats method of lithium production where it is estimated that 500,000 gallons of water is needed to produce one tonne of lithium. In addition, lithium batteries have low rates of recycling and their production involves the use of elements and chemicals which if leaked into the environment can prove toxic to both human and animal life. Processing the lithium-ion anode graphite, which is mainly derived by burning petroleum pitch, is a by-product of processing fossil fuels. All of this is helping to drive demand for cleaner and safer battery chemistries, including those based on sodium.

One of the major advantages of sodium-ion batteries is their sustainability. Sodium is a much more abundant element in the Earth's crust, amounting to 23,600 parts per million, or 35,000 ppm in sea water. This contrasts with lithium at only 20 ppm and lead at 14 ppm. What's more, sodium supply is global while lithium production is primarily focussed on a small area in South America. Overall, sodium can be produced much more cheaply and sustainably than lithium and lead, both of which have lengthy, expensive and environmentally damaging production processes. Sodium-ion batteries have the added advantage that they can be discharged to zero volts, unlike lithium batteries where the copper current collectors start to dissolve. The presence of this undischarged stored energy creates a safety risk while in transit; with no risk, sodium is much safer to transport.

While sodium-ion batteries are a number of years behind lithium-ion batteries in terms of technology, the general market belief is that sodium-ion, when fully developed, should be suitable for applications similar to those where lithium-ion batteries are currently deployed.

In a recent article published by the American Chemical Society, author K.M Abraham stated: *"We can foresee Na-ion batteries with hard-carbon anodes and cobalt-free cathodes as sustainable lower-cost alternatives to Li-ion batteries for applications such as short-range electric vehicles and large-scale energy storage (ESS) in a world that is increasingly being transformed to wind, solar, and hydroelectric power, which depend on battery energy storage for uninterrupted, around-the-clock, performance."* *Source: ACS Energy Lett. 2020, 5, 11, 3544–3547. Publication Date: October 23, 2020* https://doi.org/10.1021/acsenergylett.0c02181

Technology

Based on its underlying materials development work DGI PLC has a core anode technology, used as a key enabling technology for sodium-ion batteries. Along with partners including the University of Southampton it has developed a high energy density anode material – an anode is the positive electrode in a battery through which a positive current of electricity flows, with the cathode being the opposite negative electrode.

For its raw material, DG is working on processing an abundant source of bio-waste which currently goes to landfill. This adds to the company's green credentials as it will have negative equivalent CO2 emissions, leading to the belief that the product will command a premium price. **The company believes that its research has brought about a novel low energy processing methodology to synthesise a material for electrodes and provides cell-level storage density beyond that of lead acid batteries, and equivalent to lithium-ion phosphate cell performance.**

This research also provides advances in high-energy density capacitors (devices that store electrical energy physically in an electric field as opposed to chemically in a battery) and high-capacity sodium cells. These advances are also being incorporated into hybrid energy storage systems (HESS) aimed at combining higher power and energy density along with improved cyclability over current battery technology. EBT is currently at a Technology Readiness Level 3/4, implying that design rules have been established and lab based performance results demonstrate the viability of the technology.

Applications & Projects

In terms of initial target markets for EBT, sodium-ion is currently regarded as more suitable for stationary energy storage, for example from solar and wind energy production, given the increased weight of sodium over lithium – sodium's atomic weight is more than three times higher than lithium. Here, DGI PLC believes its technology can offer cost, safety and environmental benefits over lithium.

However, sodium-ion cells have exceeded the storage density of lead acid batteries by a factor of four times and have achieved the equivalent of lithium-ion phosphate battery performance of 140 Watt-hours per kilogram (Whr/kg). Therefore, the company also sees the potential for disrupting the electric vehicles market, which as previously stated, pretty much sees a 100% share of lithium-ion batteries. DGI PLC is also developing high-capacity advanced composite materials which it believes can take Sodium-ion beyond 200Wh/kg to compete with NMC (Nickel, Manganese, Cobalt) and NCA (Nickel, Cobalt, Aluminium) based lithium-ion cells.

DGI PLC continues to seek to increase the performance of its cells through its ongoing materials research. To that end, it completed the building of a pilot scale pouch cell production line in early 2021 to allow the manufacture of A5 size cells for testing. During 2022 it intends to lease a second facility to provide additional space for its manufacturing and integration work. The company has stated that it is in collaboration and commercial contact with several companies throughout the supply chain with the view towards volume commercialisation in the medium-term.

Pilot scale pouch cell production line at DGI's R&D facility in South Wales. Source: Company

Other Products and Technology

While DGI PLC's focus is currently on the commercialisation of the EDT and EBT offerings discussed above, it also has a wider portfolio of technologies which it believes could also be monetised in the medium to longer term. These include novel supercapacitors, polymer film capacitors, advanced stabilised ring drives for marine applications, suspension systems and vacuum system enhancements.

Further Market Background

In addition to the market information presented above it is important to understand the wider social and political environment in which DGI PLC operates and which creates huge opportunities for its technologies.

Path Investments acquired DGI PLC amongst a highly favourable environment for so called "green" technology companies, driven by the world's commitment and desire to reduce greenhouse emissions. One of the main catalysts for the industry was in 2015 when 196 countries adopted the Paris Agreement, the historic international treaty on climate change. This had the aim of reducing global warming and building resilience to climate change, with an overall goal of limiting warming to no more than 1.5 degrees Celsius.

As we write, according to The Energy and Climate Intelligence Unit, more than 130 countries have now set, or are considering, a target of reducing emissions to net zero by mid-century, with many countries having signed their targets into law. At last year's COP26 conference in Glasgow, world leaders committed to a range of new emissions reducing strategies, with new technologies flagged as being critical for meeting targets.

It's no surprise that there is big money behind the industry, both from public and private sources. At COP26 one key announcement was that the Glasgow Financial Alliance for Net Zero, a global coalition of leading financial institutions looking to accelerate the transition to a net-zero global economy, has now attracted members with total assets of $130 trillion.

On the public side, in the UK the government's recent *Net Zero Strategy: Build Back Greener* report highlighted a number of initiatives designed to meet the country's own net-zero by 2050 target. Important for DGI PLC, the report highlighted that transport is one key area of focus, with the domestic transport sector estimated to have the largest share of UK greenhouse gas emissions of any sector across the economy, at 23% in 2019. **Demonstrating the size of the opportunity in the UK, the government estimates that to achieve the level of emissions reductions in the transport sector indicated by its delivery pathway to 2037, there will need to be additional public and private investment of around £220 billion.**

Further, July 2021's *Transport Decarbonisation* plan set out the details of decarbonising the entire transport system in the UK, with initiatives including stopping the sale of new petrol and diesel cars and vans by 2030 and removing all diesel-only trains from the network by 2040. Around the world, over 20 countries, along with a number of provincial and state governments, have set time frames for phasing out sales of new internal combustion engine cars, or only allowing new sales to be electric.

Sector specific potential

In the EDT segment, DGI PLC is addressing the electric powertrain market. Components within this include the likes of the motor/generator, battery, power electronics controller, converter, transmission, and onboard charger. According to a July 2021 report from Grand View Research, the global electric powertrain market was valued at $71.86 billion in 2020 and is expected to grow at a CAGR of 33.5% from 2021 to 2028. The includes battery electric vehicles (BEV) and hybrid and plugin hybrid electric vehicles (HEV/PHEV).

By component, the report suggests that batteries accounted for a 64% revenue share in 2020, with batteries making up around 50% of the total cost in BEVs. However, technological advancements are expected to produce in a fall in battery prices over the forecast period. Important for DGI PLC, Grand View is looking for the motor/generator segment to deliver a CAGR exceeding 30% over the forecast period. The demand for e-motors is being driven by the increased penetration of BEVs and PHEVs globally.

Meanwhile in the EBT segment, a February 2021 report from Global Market Insights valued the stationary storage battery market at $23 billion in 2020 and is looking for it to grow at a CAGR of 25.1% from 2021 to 2030 to reach a value of $140 billion. This is being driven by investment in sustainable energy sources such as solar and wind and the need for efficient energy storage systems. **Minerals consultancy Adamas Intelligence meanwhile believes that sodium-ion could capture a 15% share of the global battery market by 2035, driven by scarcity of materials including lithium and cobalt**.

Growth Strategy

Following the reverse takeover and associated fund raising DGI PLC finds itself in a strong position to move its two key areas of focus towards product commercialisation. Some of the funding proceeds, estimated at £0.3 million - £0.6 million per annum, will be spent on strengthening the management and commercial teams. This will have the added advantage of allowing founder Martin Boughtwood to focus on product development in his new role of Chief Technical Officer.

For both EDT and EBT, the near-term strategy is to progress to commercial sales agreements with existing contacts. To support this, the R&D team will be expanded during 2022, increasing overheads by c.£0.2 million per annum.

In EDT, the following three near-term objectives are expected to have development costs of c.£0.3 million. Firstly, concluding the current discussions with regard to a joint venture or supply agreement with a Tier 1 supplier to the commercial vehicle sector for incorporation of EDT into a future electric drivetrain solution during 2022. Secondly, to complete the current Innovate UK grant funded project, which is being developed in conjunction with the same Tier 1 supplier, during 2022. Finally, to complete the integration and testing of EDT systems under the UK Government contract by the end of 2022.

In EBT, the following short-term objectives are expected to cost a total of c.£0.25 million in development expenses. Ongoing internal testing and the manufacture of cells suitable for external testing; completing external comparison test work of EBT anode material cell level performance during H2 2022; and completing the scale-up of the current pilot scale battery manufacture, which has been partially funded by Innovate UK, in Q4 2022.

Alongside the above, DGI PLC is looking to develop applications for EDT outside of its existing automotive solutions. To that end, the company is developing a zero emission marine drive application and aims to enter into a framework agreement with a marine system developer during 2022. Given the pace of progress, and following the building of the EBT pilot assembly production line, the existing R&D facilities in Caerphilly are now close to capacity. As a result, the intention is to lease an additional facility during 2022 ahead of expected product manufacturing which is likely to commence in 2023/24.

In the longer term, DGI PLC sees significant potential for its revenues to scale up, particularly given the growth forecasts in its target markets, including some of those we have described. **Its ultimate goal is to evolve from being an R&D business into a Tier 2 supplier and/or technology licensor to the electric mobility and energy storage industries.**

In terms of business model, in-house manufacturing and direct product sales are expected to form the basis of any future commercial agreements with the UK Government and potentially Tier 1 manufacturers in the longer term. This model is likely to offer the opportunity for higher margins but also requires moderate up-front capital expenditure. To broaden the mix of revenues, DGI PLC expects its longer-term revenue model to include licensing (whereby a customer would pay an upfront fee for the technology transfer) and royalty agreements based on sales or savings. Joint ventures will also be considered, allowing a sharing of margins while keeping large-scale manufacturing costs at arm's length.

Financials

DGI Ltd

As mentioned above, DGI remains in the R&D stage of its development, with income and funding having been uncertain and staggered during its existence. In the most recent financial year, to 31st March 2021, revenues grew to £285,000 from £192,000 with the operating loss reducing from £1.02 million to £337,000. Following other gains and losses amounting to £118,000 the pre-tax loss was £455,000 with additional tax credits resulting in a net loss of £403,000.

Path Investments

Interim Results

Path's most recent set of results covered trading in the six months to 30th June 2021. A net loss of £736,254 was posted for the period, with administration costs mainly relating to work on a potential acquisition that was aborted in February.

Following the termination of the deal, March saw the completion of a £3.87 million gross equity fundraising at 0.25p per share. The funds were to be used to support the company's continuing investment strategy. Investors in the fundraise were also issued with two warrants for every two shares subscribed for, with one warrant having an exercise price of 0.25p and the other at 0.5p, exercisable within five years from the date of grant in the absence of a change of control of the company. Following the receipt of the proceeds, cash at the period end stood at £2.27 million.

Key Risks

Early stage nature of operations/technology risk

While it has made significant progress to date, DGI PLC does not yet have an established track record or knowledge base of how its technologies will perform in real world environments. While they have advanced through a number of technology readiness levels and shown promising test results, there is no certainty that the technologies will perform at the same level once in mass production, or that they will not be rendered obsolete before they gain market traction. If these events occur, they may affect the ability of the company to earn income as expected from its current partners and projects.

Competition risk

DGI PLC faces competition from a range of larger and smaller businesses across its two segments. As well as there being a number of smaller rivals in the electric drive train market, a number of electric vehicle OEMs design and manufacturer their own components in-house. In the battery industry, there are companies already involved in the manufacture of sodium-ion anodes. With both business segments seeing fast growth and being technologically driven, it can be expected that competition will intensify, with the potential for other parties developing novel technologies more advanced than DGI PLC's own offerings.

Intellectual property risk

As a research and development business it is important for DGI PLC to protect and enforce its intellectual property rights in order to commercial success. While a number of patents have already been granted, the company may become involved in disputes with other parties who may have developed similar technologies. There is also no certainty that the outstanding patent applications will result in patents being granted.

Funding risk

To date DGI PLC has been in research and development mode and relied on a range of methods to fund its operations, primarily grants. While revenues have been earned, the company remains loss making at this stage. Following the recent fund raising, there is expected to be sufficient working capital to undertake planned development work, to cover overheads and required capital expenditures, through to product commercialisation. However, until the company scales up to become cash flow positive it faces funding concerns. What's more, in order to take advantage of further investment opportunities, or to pay for corporate costs, DGI PLC may undertake further equity funding raisings, which could be dilutive to shareholders.

Management

Nicholas Tulloch - Non-Executive Chairman

Mr Tulloch has advised companies on the UK capital markets for over 20 years, working for several well known investment banks and stockbrokers, including Cazenove, Arbuthnot, Cenkos and Cantor Fitzgerald. With a particular focus on oil and gas, Mr Tulloch has worked on several cross-border transactions in many parts of the world. In 2019 he became finance director and then subsequently CEO of Zoetic International plc transforming the company from its oil and gas roots to become the first vertically integrated CBD company to be listed in London. Mr Tulloch began his career as a solicitor with Gouldens and he holds a master's degree in law from Oxford University. Mr Tulloch stood for parliament in 2017.

Christopher Theis – CEO

Mr Theis is an experienced investment banker and entrepreneur. He has led number one rated City teams, including Smith New Court and Hoare Govett in the origination, structuring, flotation and placement of secondary market transactions of numerous successful companies. Chris has also founded a number of successful quoted and private businesses. Mr Theis holds an MBA from City University Business School.

John (Jack) Allardyce - Finance Director

Mr Allardyce has over 15 years' experience in the energy sector, including 10 years as a leading equity research analyst with a number of UK investment banks. He began his career as a process engineer working on North Sea projects, before joining the leading research and consultancy house Wood Mackenzie, specialising in the European upstream industry. Mr Allardyce's skillset spans global asset evaluation, financial forecasting, corporate advisory, M&A and equity capital markets. Mr Allardyce graduated from Heriot-Watt University with a degree in Chemical Engineering.

Martin Boughtwood - Chief Technical Officer

Martin Boughtwood is the Founder and Managing Director of DGI PLC, an advanced research and development company focussing on the material science of energy storage and development of novel electric drive technologies. Martin Boughtwood is an inventor, with over 20 patents filed in the last 5 years. With his background in electronics, mechanical engineering and power management systems, and company leadership roles over 40 years, Martin Boughtwood focuses on the innovation of, sustainable, non-toxic solutions that leverage material property enhancements: improving energy efficiency for a host of applications across a plethora of potential end markets.

Patrick (Pat) Symonds - Independent Non-Executive Director

Mr Symonds has had a 40+ year career in motorsport. He started his career designing championship winning cars for the lower formulae and then joined the fledgling Toleman F1 team working with Ayrton Senna. His subsequent partnerships with Michael Schumacher and Fernando Alonso produced 32 race wins, four Drivers' World Championships and three Constructors' World Championships. During this time he became Technical Director of the Benetton Formula One Team and latterly the Renault Formula One Team. After some years running his engineering consultancy, Neutrino Dynamics, he accepted an offer to become CTO at the Williams F1 team, a position he held until the end of the 2016 season. Mr Symonds is now Chief Technical Officer at F1 (Formula One Management) tasked with setting up a small technical group to assist the FIA in the formulation of future F1 and is involved in the transition of F1 to a low carbon economy. Mr Symonds is also a visiting professor at Cranfield University, a chartered engineer and a Fellow of both the Institution of Mechanical Engineers and the Royal Aeronautical Society.

Sir Stephen Dalton - Independent Non-Executive Director

Sir Stephen Dalton served for nearly 40 years having joined the Royal Air Force in 1976 after graduating with an honours degree in Aeronautical Engineering from Bath University. Sir Stephen was appointed Head of the Royal Air Force in 2009 and retired from the Royal Air Force in 2013. He has worked with a number of major international companies advising them on the development of strategy and international engagement. He has also worked with a number of Company Boards helping them to improve their collective performance at Board level. Sir Stephen Dalton was sworn into office as Lieutenant Governor of Jersey, in March 2017 at the start of his 5-year term of office and was President of The Royal Aeronautical Society for a one year fixed term position. He was appointed a Knight Commander of the Most Honourable Order of the Bath (KCB) in 2009 and advanced to Knight Grand Cross of the Order of the Bath (GCB) in 2012. In 2019, Her Majesty The Queen appointed him as Bath, King of Arms.

Andrew Boughtwood - Non-Executive Director

Andrew Boughtwood is an experienced company director. For the last 17 years, he has been Managing Director of Megger Limited and overseas operations in over 30 countries. His is experienced across the electronic/electrical instrumentation field serving customers in communications, power contracting and utilities, industrial automation, power generation/ renewable energy, automotive, military and aerospace. Andrew Boughtwood is a graduate of Swansea University with a bachelor degree in computer technology. Andrew Boughtwood is the brother of Martin Boughtwood and a shareholder of DGI PLC.

Trevor Gabriel - Non-Executive Director

Mr Gabriel is managing partner of a real estate brokerage in Monaco, having previously been Finance Director of Camper & Nicholson International, the yacht brokerage firm. He is a chartered accountant and fellow of the ICAEW and spent 12 years with Jardine Matheson in finance and general management roles. He is currently non-executive director of TSX-V listed GlobalBlock Digital Asset Trading Limited and previously was a non-executive director of Kirkland Lake Gold Ltd while it was TSX listed and AIM quoted. Mr Gabriel is currently a shareholder of DGI PLC and previous director of DG Innovate.

Valuation

DCF Analysis

Given the early-stage nature of its operations, lack of current profits but significant future potential, we consider that the best way to put a valuation on DGI PLC is via an appropriately risked discounted cash flow model. Working with management and considering wider industry sources we have put together a DCF model with a four-year time horizon out to 2026. We also add a terminal value in order to establish an appropriate value for the shares of DGI PLC. Our key assumptions are discussed below.

Revenues

As the company's range of projects with various partners continues to progress, we are expecting significant revenue growth from product sales over the time horizon of our forecast model. This is expected to be mainly driven by use of EDT by the UK Government and the related sales of electric motors and inverters and also revenues from the integration of the systems into the government vehicles. In 2025 we are also expecting further EDT sales from the company's relationship with the un-named Tier 1 supplier to the commercial vehicle sector.

Given the earlier stage nature of the business segment, we are expecting only minimal sales of sodium-ion batteries over the four-year forecast period but see significant longer term potential. We also expect that product sales will be complemented by modest income from licences, royalties and grants.

Profits

We see the business entering profitability in 2024, with profits then jumping significantly in 2025. This can be a highly profitable business, with the expectation that motor and inverter sales will deliver gross margins in the high 40% level once scale is achieved. Integration of the units meanwhile is expected to see margins in the mid to high 60% level. For the EDT sales to the Tier 1 commercial vehicle supplier, we are looking at gross margins in the mid 30s. Overall, we are expecting EBITDA margins to settle at 42% by the end of the forecast period. We conservatively assume that tax will begin to be paid in 2024 as the company becomes profitable although note that Path has c.£6.2 million of trading losses.

Our headline P&L forecasts are presented below.

Year to December	**2022**	**2023**	**2024**	**2025**	**2026**
Revenues	285,000	1,985,375	13,222,053	80,970,495	82,806,716
COGS	-138,131	-822,418	-6,822,498	-40,597,896	-43,963,377
GROSS PROFIT	**146,869**	**1,162,957**	**6,399,555**	**40,372,599**	**38,843,339**
Other revenues	439,824	160,241	688,032	1,195,051	3,589,000
TOTAL GROSS PROFIT	**586,693**	**1,323,197**	**7,087,587**	**41,567,650**	**42,432,339**
Overheads	-2,667,741	-2,738,754	-3,842,518	-6,620,056	-7,472,717
EBITDA	**-2,081,048**	**-1,415,556**	**3,245,069**	**34,947,594**	**34,959,623**
Depreciation & amortisation	-475,564	-952,394	-1,460,254	-1,289,591	-1,153,291
EBIT	**-2,556,612**	**-2,367,951**	**1,784,814**	**33,658,003**	**33,806,331**
Interest	-32,594	-25,604	-16,942	-7,356	0
Tax	97,835	128,833	-238,704	-6,282,359	-6,302,339
NET PROFIT	**-2,491,371**	**-2,264,722**	**1,529,168**	**27,368,287**	**27,503,992**

Source: Align Research

DCF calculation

To calculate the free cash flow to the firm we make various assumptions regarding capex, depreciation and amortisation and changes in working capital then factor them into the model.

It should be pointed out that our revenue forecasts assume that the projects with specific customers are successful and move onto their next phases in a timely manner. Any delays or unsuccessful conversions or would materially affect our numbers. However, to account for this we place an appropriate discount rate in our valuation. We have chosen to use a discount figure of 20% in our base case model but also present a valuation matrix with other figures used.

After discounting the free cash flows for the five-year time period we also add in a terminal value. For this we use a terminal growth rate of 10%, which we believe is reasonable given the growth rates being predicted in the company's target markets and given the potential for significant growth from a small base. From this we take away the present value of predicted costs at the group level (assuming corporate costs growth by 5% per annum) and add in the net cash position of £6.1 million following the completion of the reverse takeover. We value the company on a fully diluted basis, assuming that the deferred consideration shares are issued and that all outstanding warrants and options are exercised, adding in the income from those warrants and options.

The findings of our DCF model are presented in the table below.

Year to December	**2022**	**2023**	**2024**	**2025**	**2026**
Net income	-2,491,371	-2,264,722	1,529,168	27,368,287	27,503,992
Capex	-451,360	-2,613,658	-3,290,000	-539,368	-564,832
Depreciation & amortisation	475,564	952,394	1,460,254	1,289,591	1,153,291
Change in working capital	10,189	136,507	82,324	-1,491,993	239,532
FCFF	**-2,456,979**	**-3,789,479**	**-218,253**	**26,626,517**	**28,331,983**
Year	1	2	3	4	5
Discount factor	1.20	1.4400	1.728000	2.07360000	2.48832000
PV of cash flows	**-2,047,482**	**-2,631,583**	**-126,304**	**12,840,720**	**11,385,989**

5 YEAR NPV	19,421,340
NPV OF TERMINAL VALUE	125,245,876
Less PV of corporate costs	-5,000,000
TOTAL	**139,667,216**
Net cash + warrants & options income	16,759,000
VALUE TO EQUITY HOLDERS	**156,426,216**
Fully diluted share capital	13,125,025,474
Value per share (p)	**1.192**

Valuation

Our DCF analysis shows that DGI PLC's business model looks to be potentially highly profitable. We see the significant forecast scale up in product sales from 2025 leading to annual free cash flows almost approaching the value of the price that Path Investments paid for the business, within just three years. We note that a high proportion of the valuation comes from the terminal value NPV. But, as mentioned, we believe that this is sensible given the long-term potential of the company's technologies and forecast growth in its target markets. It could even be conservative given that we have attributed minimal revenues to the EBT side of the business.

With a total value to equity holders of £156.43 million, we calculate a fair value of 1.192p per share after dividing by the 13.125 billion fully diluted share capital. We choose to set this as our base case target price for the company, implying 138% upside from the subscription price of 0.5p.

As our valuation is highly sensitive to the discount factor and growth rate assumed in the model, below we present a matrix of valuations if those two factors are changed.

	20%	**21%**	**22%**	**23%**	**24%**	**25%**	**26%**	**27%**	**28%**	**29%**	**30%**
5%	0.845	0.780	0.723	0.673	0.629	0.590	0.555	0.523	0.495	0.469	0.446
6%	0.894	0.822	0.759	0.704	0.656	0.613	0.575	0.541	0.511	0.483	0.459
7%	0.952	0.870	0.800	0.739	0.686	0.639	0.598	0.561	0.528	0.499	0.472
8%	1.018	0.925	0.846	0.778	0.719	0.668	0.623	0.583	0.547	0.516	0.487
9%	1.097	0.990	0.900	0.823	0.757	0.701	0.651	0.607	0.569	0.534	0.504
10%	1.192	1.066	0.962	0.875	0.801	0.737	0.682	0.634	0.592	0.555	0.522
11%	1.307	1.157	1.036	0.935	0.851	0.779	0.718	0.665	0.618	0.578	0.541
12%	1.452	1.269	1.124	1.007	0.910	0.828	0.759	0.699	0.648	0.603	0.564
13%	1.638	1.409	1.233	1.092	0.979	0.885	0.806	0.739	0.681	0.632	0.588
14%	1.886	1.589	1.368	1.197	1.062	0.952	0.861	0.785	0.720	0.664	0.616
15%	2.233	1.829	1.542	1.328	1.163	1.032	0.926	0.838	0.764	0.701	0.647

Table: DGI PLC fair value target price in pence at selected growth and discount rates. Source: Align Research. Base case

Peer analysis

An analysis of DGI PLC's peer group provides limited useful information for a comparable valuation using earnings multiples given that most companies within it (along with DG) remain loss making. However, to illustrate the kind of valuations currently being attributed to companies in the sector we feel it is worth looking at some select companies and recent transactions within the wider electric vehicle and green energy storage industries.

Tesla Inc. – market leading electric vehicle company and poster child of the industry Tesla (TSLA) delivered over 936,172 EVs to customers in 2021. Revenues for the year were $53.8 billion with a net profit of $5.64 billion. The company is currently being valued at $1.11 trillion, a multiple of 197 times last year's earnings.

Rivian Automotive – electric vehicle business Rivian (RIVN) makes sport utility vehicles and pickup trucks. It listed on the NASDAQ in November 2021 raising $13.7 billion at $78 a share, with the current price of $50.24 valuing the business at $45.2 billion. For the year to December 2021 net losses were $4.69 billion on revenues of just $55 million as the company began production and deliveries of three vehicles.

Nikola Corporation – Nikola (NKLA) is a designer and manufacturer of zero-emission battery-electric and hydrogen-electric vehicles, electric vehicle drivetrains, vehicle components, energy storage systems and hydrogen station infrastructure. The company is currently valued at $4.47 billion on NASDAQ and in 2021 made a net loss of $690 million on zero revenues.

Arrival Limited / CIIG Merger Corp. - In March 2021 Arrival (ARVL), listed on NASDAQ following a $5.4 billion merger with CIIG Merger Corp. Arrival is producing EVs competitive in price with fossil fuel alternatives and substantially lower than comparable EVs. It has developed a new method of designing and producing zero-emission vehicles using its proprietary hardware, software and robotics technologies and low cost microfactories. The current market cap is $2.375 billion, with results for 2021 expected to show a loss of €1.087 to €1.096 billion.

XL Hybrids, Inc. / Pivotal Investment Corp II – in December 2020 the $1 billion merger was completed between vehicle electrification solutions business XL Hybrids and acquisition vehicle Pivotal Investment Corp II. XL Fleet is a leading provider of vehicle electrification solutions for commercial and municipal fleets in North America, with more than 140 million miles driven by customers. XL Fleet's electric drive systems can increase fuel economy up to 25-50% and reduce carbon dioxide emissions up to 20-33%. Revenues were $15.6 million for 2021, down from $20.3 million, with an adjusted EBITDA loss of $50 million compared to a loss of $14.7 million for 2020.

National Electric Vehicle Sweden / Mini Minor – in June 2020 Mini Minor, a subsidiary of Chinese real estate giant Evergrande, bought the remaining 17.6% of equity in National Electric Vehicle Sweden (NEVS) for c.$380 million, valuing NEVS at c.$2.2 billion at the time. NEVS is a manufacturer of electric vehicles and vehicle components.

Hankook AtlasBx Co / Hankook Technology Group – in April 2021 the merger was completed between Hankook Technology Group, the holding company of South Korean tire maker Hankook Tire & Technology, with battery-making subsidiary Hankook AtlasBX Co. The deal was valued at c.£67.5 million. Hankook AtlasBx produces passenger car and light truck lead-acid batteries, was the first in Korea to unveil a maintenance free battery and is transitioning into a smart energy solution company.

Our peer analysis demonstrates that that while many companies in the industry remain loss making, investors are willing to put huge valuations on businesses which they see have significant growth potential. This is still the case once they start making consistent profits, with Tesla being a case in point being on a huge annualised PE multiple, as described above. We note that if DGI PLC meets our net income forecast for 2026 that on our valuation it will be on an earnings multiple of little over 2 times. For illustrative purposes only, applying Tesla's multiple to our 2026 forecasts for DGI PLC implies a valuation of £5.42 billion. While that is more a reflection of the high valuation of Tesla, it does demonstrate what investors are willing to pay for access to growth stocks in the EV/alternative energy technology industries.

Conclusion

DGI PLC has made significant progress to date on the development of its novel technologies. This has been reflected in the sizeable grant funding having been received, along with the company attracting a range of partners who are looking to apply its technologies to their own activities. Progress is being made in the context of a highly favourable political, social and financial environment for emissions reducing technologies, all of which set the scene nicely for growth in the coming years.

Following the reverse takeover and associated fund raises DGI PLC now finds itself in a strong position to finance the product trials, testing and further development required to begin earning significant revenues from its products. The relationship with the Ministry of Defence is key to the current investment case given that the associated forecast revenues make up a large chunk of our valuation. We will be watching closely for further progress reports on this deal but given the large range of applications of the company's technologies we also expect further opportunities to reveal themselves over the coming months.

Noting the risks to the company's operations and our valuation model, we initiate coverage of DGI PLC with a target price of 1.192p and a stance of **Conviction Buy.**

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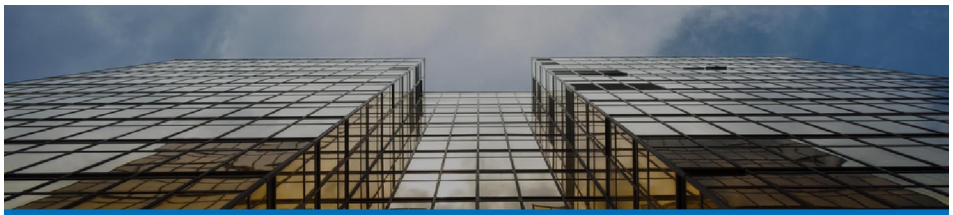

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