Digital Futures
Thought Leadership

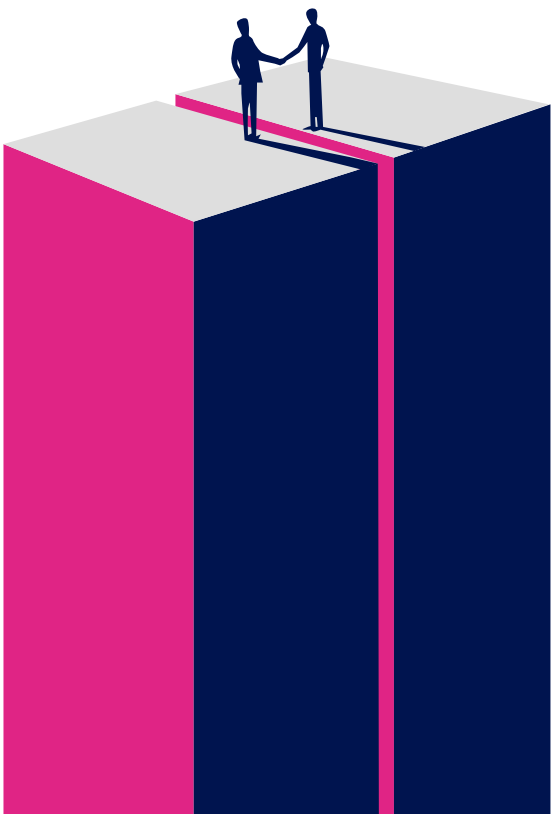
Powering sustainability through digital skills

The urgent need to close the ESG data gap to tackle the ESG agenda.

Synopsis

Environmental, social and governance (ESG) criteria are playing a major role in measuring performance and establishing priorities for organisations across the world. Businesses understand both their responsibility to commit to sustainable growth, but also the opportunity they have to power solutions to the crises facing the planet, with the environment and climate change being two of the most critical issues.

However, there is a major challenge in accessing consistent and comparable ESG data; data that is crucial to ESG reporting, analysis, and modelling. Closing this data gap is therefore critical to progress. Thus, digital skills are central to unlocking the opportunities that the ESG agenda presents and helping to power a better, more sustainable future.



Why ESG?

The term is ESG has massively increased in relevance in recent times. Before delving into the importance of ESG data, it is useful to define ESG and understand why organisations are prioritising the ESG agenda. ESG is a framework that helps stakeholders understand how an organisation is managing risks and opportunities related to environmental, social, and governance criteria. ESG is an evolution from corporate social responsibility (CSR) and is a reflection of the role that large organisations have to play at a time when the climate crisis looms, and social issues have been pushed to the forefront. Companies, consumers, suppliers, shareholders, and regulators are becoming more cognisant of the impact of their operations and, as such, sustainable transformation has become an absolute priority for organisations of all sizes. The shift to incorporating ESG as part of strategy has occurred for a number of key reasons:

1

Increased regulation:
Perhaps most importantly, there has been a push from governments all over the world to increase regulation to ensure companies push forward with sustainability and climate goals. The UK government has introduced increased regulation of methodologies, governance and processes in line with four of the government's key objectives – net zero, consumer protection, UK international competitiveness, and economic growth. Financial services institutions are being heavily regulated in relation to several ESG criteria by the IAIS, European Central Bank (ECB), Prudential Regulation Authority (PRA), ESMA, FCA and European Commission amongst the key regulators. Since 2022, climate related financial risks have become a core component of the PRA's supervisory approach.

2

Demands for sustainability:
ESG criteria are becoming an increasingly important metric for multiple stakeholders. Banks, investors, and business partners are consistently using ESG criteria to assess businesses and are far more sustainability conscious. Moreover, the workforce has become increasingly expectant from a sustainability perspective, particularly amongst the "sustainability native" younger generation.

3

Powering strategic decision making:
The benefits of investing in ESG go far beyond having to meet regulatory or CSR commitments. ESG data should be embedded within regular company processes as it can massively help organisations understand where they can improve company performance and impact, identify risks and opportunities and thus lead to better strategic decision making.

Closing the data gap

The single biggest challenge facing organisations of all sizes in their quest to meet the ESG agenda is the ESG data gap. This refers to the lack of consistent, reliable, and comparable data on ESG that can be used across companies and industries. Data is critical to any ESG assessment, yet the ESG data landscape is somewhat disjointed. Reliable data is absolutely necessary to enable accurate reporting and analysis of ESG factors. However, ESG data is characteristically unreliable, due to a lack of standardisation. In its current forms, ESG data is difficult for organisations to make impactful use of.

Why does ESG data present such a massive challenge?

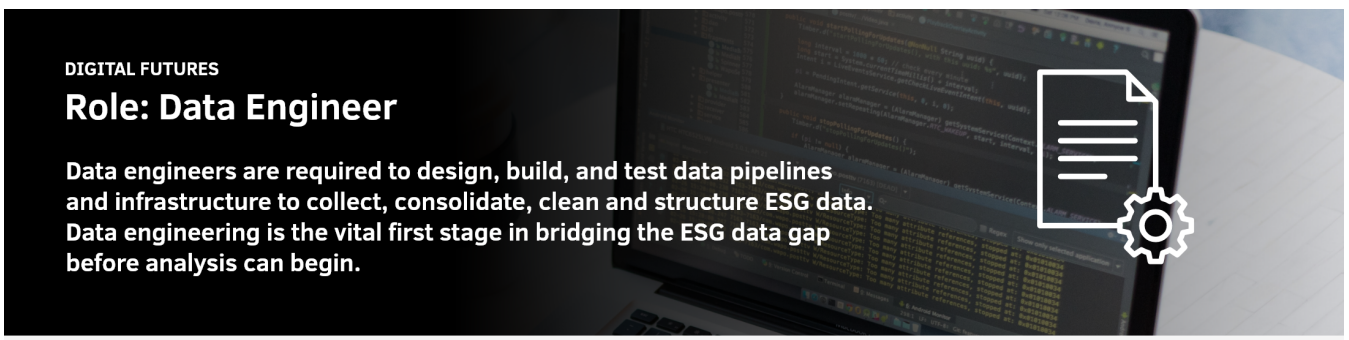
- Providing ESG data is often voluntary, meaning that organisations can provide and withhold information of their choosing. This makes it particularly difficult to make ESG data comparable across organisations.
- Due to a lack of standardisation, ESG data is often patchy, inconsistent and varies massively between organisations. The data that is provided is largely based on self-assessment, which increases the risk of "greenwashing".
- Since ESG data comes from such a wide variety of structured and unstructured sources, practices to obtain ESG data are weak and suffer from interdependence. Data collectors and providers are unable to independently verify their data and use different infrastructure and practices in which to aggregate the data. This can lead to the outputs being wildly different.
- ESG data is often out of date. Historical data can be useful, but the ESG agenda is moving quickly and there is a greater need for new data rooted in the present to allow companies to be more forward-looking.
- There is no single source of truth when it comes to ESG data. The necessity to access ESG data from multiple sources and providers massively exposes the lack of critical data infrastructure within organisations.

With the increase in regulation and demand for ESG reporting, there needs to be a push towards standardisation and harmonisation within ESG data, which will make it much easier to report, analyse and understand data from different sources over time. Organisations, therefore, must have a strong capacity to collect, prepare, and subsequently analyse data. Given the current challenges in the ESG data space, this will be easier said than done. However, the increase in provision of digital skills will be imperative in closing the data gap and powering sustainability.

The skills solution

The fact is that ESG will continue to remain a priority for organisations. And providing consistency is key. Organisations need to be measuring the same things in the same way, partly by unlocking new data sources but also by blending and manipulating data to make it usable. As has been discussed, ESG data presents a huge challenge because it is disparate – there is no single source of truth. Data capability is critical to blending data from multiple sources to bring consistency over time.

Faced with the ESG data gap, digital skills are the most powerful tool at an organisation's disposal. Overcoming the ESG data challenge depends on a broadening and deepening of capability across data engineering, data analysis and data science:



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Role: Data Engineer

Data engineers are required to design, build, and test data pipelines and infrastructure to collect, consolidate, clean and structure ESG data. Data engineering is the vital first stage in bridging the ESG data gap before analysis can begin.

Tools & Methodologies	Skills & Technologies	Application in closing ESG Data Gap
Artificial Intelligence (AI) Machine Learning (ML)	GCP ML AWS ML Python	ESG data comes from in both structured and unstructured formats. AI and ML will allow the automation of collection of this structured and unstructured data from a wider variety of sources.
Data Acquisition	Knime	Leverage new primary and secondary data sources to increase and enhance collection of raw ESG data.
Extract-Transform-Load (ETL)	Talend PostgreSQL	Centralise raw data from multiple ESG data sources into one repository to prepare data for analysis.
Data Pipeline	Apache Airflow SQL PySpark Spark Scala	Design efficient data pipelines to automatically process, transform, and move large amounts of ESG data between source systems and target repositories.
Data Quality	Talend	Measuring how well ESG datasets meet the criteria for accuracy, completeness, validity, consistency, uniqueness, timeliness, and fitness for purpose.
Big Data	PySpark Hadoop	Large, varied and complex ESG data sets require more powerful big data processing, analysing, and visualizing techniques.
Cloud Services	AWS GCP	Leveraging cloud computing power to build cost-effective and scalable data pipelines and to manage data storage and retrieval at scale.
Data Modelling	Data Warehousing PostgreSQL	Design and implement efficient data models that capture the structure, relationships, and constraints of complex ESG data domains in a clear and concise manner, ready for analysis.

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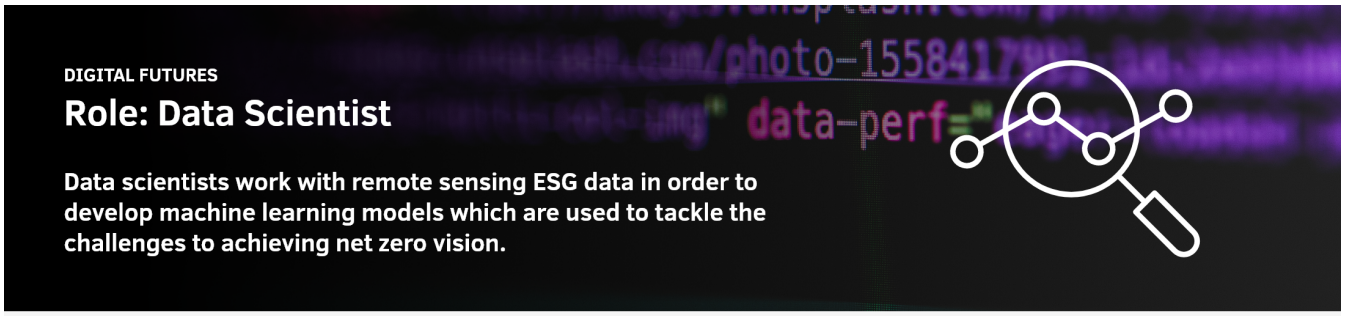
Role: Data Analyst

Data analysts will use ESG data to develop scenario analysis, forecasting and risk management, analysis of performance against organisational ESG targets as well as to identify powerful opportunities within ESG.

Tools & Methodologies	Skills & Technologies	Application in closing ESG Data Gap
Data Visualization	Tableau	Represent ESG data through data visualisations to communicate complex data relationships and provide actionable insights and support data-driven decision-making within an ESG context.
Predictive Modelling	Python Pandas Sci-Kit Learn	Produce robust predictive models with a clear understanding of model performance for use in risk forecasting and prediction.
Machine Learning (ML)	Tensorflow Classifiers Sci-Kit Learn	Employ supervised and unsupervised learning techniques to develop models from labelled and raw ESG data respectively.
Data Analytics	PostgreSQL Tableau PySpark	Understand the patterns within ESG data, changes over time in business metrics and deliver on regulatory requirements.
Business Intelligence and Stakeholder Engagement	Tableau PostgreSQL	Increasing knowledge dissemination by combining methodical thinking and business acumen to transform ESG data into information that can be confidently communicated to all stakeholders.



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Role: Data Scientist

Data scientists work with remote sensing ESG data in order to develop machine learning models which are used to tackle the challenges to achieving net zero vision.

Tools & Methodologies	Skills & Technologies	Application in closing ESG Data Gap
Artificial Intelligence (AI)	Natural Language Processing	NLP offers a huge amount of potential from an ESG perspective. Insight can be extracted from unstructured data sources, such as communications data, but can also be used to interrogate corporate information, all of which will be rich in ESG insight.
Data Science	Mathematics Statistics	Applying mathematics, statistics and data mining techniques across numerical, text and time series data to gain actionable insights that generate value in an ESG context.
Model development and governance	Python Git	Handling all parts of the modelling lifecycle, including building, approving, back-testing, calibrating & deploying models across a range of on-prem and cloud-based environments, maintaining a strong audit trail and minimising model risk.
Machine Learning (ML)	Tensorflow Classifiers Sci-Kit Learn	Using supervised and unsupervised learning techniques to produce models and evaluate model performance to produce accurate, traceable, transparent and ethical predictions e.g. risk, climate modelling.

Accessing digital skills

Digital skills and technological developments are fundamental to driving any ESG solution. The increased efficiency and capability brought by digital capability is substantial and will enable corporations to capture the increased level of data required to deliver on their respective ESG agendas.

These skills, however, are not easily accessible. If they were, organisations would not be grappling to close the ESG data gap. The Digital Futures Academy is developing junior, diverse talent with the key technical and business skills and capabilities required to leverage actionable insights at scale to drive ESG data transformation and, in turn, tackle key ESG challenges.

Moreover, the benefits of increasing data capability within the ESG context extends far beyond simply closing the ESG data gap to enable more accurate and detailed reporting on ESG criteria. It is important to emphasise that increased ESG data also provides a unique opportunity for organisations to really create value and make a significant impact internally and externally, rather than merely following a defensive strategy to meet investor demand or meet regulatory commitments.

Therefore, increasing access to digital skills is pivotal for organisations of all sizes to meet their ESG agenda but also to create new opportunities for innovation and solutions in the ESG space, ultimately powering sustainable growth.