

Big Data

Factsheet



WHAT IS BIG DATA AND WHY IS IT IMPORTANT?

The term 'big data' was first coined by NASA scientists in 1997 and became more widely used a decade later. However the industry has graduated from the term 'big data' to the more commonly used 'data' to reflect the notion that data does not need to be 'big' to have value. However, it is often the volume of data that leads to the confidence in the insights that are derived from it.

Data and the potential insights offered is increasingly important. Indeed, the seemingly ubiquitous occurrence of the term 'big data' in corporate circles belies its increasing influence in driving competitive advantage. In recent years the exponential growth of the internet economy and smartphones have contributed towards making data the opportunity that it is. This is now being boosted further with the Internet of Things (IoT) – the interconnectivity of devices or 'things' such as smart home technology. For example the Nest Learning Thermostat which connects to wifi and the Cloud so you can remotely control the temperature of your home from anywhere on your mobile device.

WHAT IS BIG DATA?

The Oxford English Dictionary defines big data as: 'Extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions.'

Put simply, access to data is an opportunity for organisations to extract insight and therefore value. It is about identifying, interrogating and analysing data to deliver competitive and therefore financial advantage.

THE 5VS - ARE KEY ASPECTS OF THE DATA OPPORTUNITY:

1. Volume

Everyday 2,500,000,000,000,000 bytes of data is created.

2. Variety

Data can be structured and unstructured including text, audio, video, click stream and many more.

3. Velocity

The speed at which data is being created is increasing. The speed at which it can be stored, processed and analysed is also increasing but could be struggling to keep up in some circumstances.

4. Veracity

This refers to the certainty or accuracy of data.

5. Value

A data strategy aligned with businesses or organisation objectives will generate value. Value is in the actionable insight that comes from analysing your data. All businesses will have data but understanding what it can tell you and how to access that insight is the key to generating real value.

“Without big data, you are blind and deaf in the middle of a freeway.”

Geoffrey Moore,
Management Consultant and Theorist



“Hiding within those mounds of data is knowledge that could change the life of a patient, or change the world.”

Atul Butte,
Stanford School of Medicine

WHY IS IT IMPORTANT?

Data is a game changer.

It opens up ways in which organisations can outperform competitors. It shouldn't be ignored or you may find that your business is no longer competitive and that your market has moved away from you.

Data provides a wealth of opportunities and can be a strategic asset in trade, competition and innovation. Whether using historic or real-time data that's generated through supply chains, production processes or customer behaviours, an organisation has much to gain by analysing the wealth of information they have at their fingertips.

Data can be used to:

- Deliver efficiencies... such as:
 - Understanding customers' behaviour & sentiment leading to more effective and efficient targeting
 - Preventing service outages through better planned maintenance
 - Managing warranty costs through early detection of product design fault/failure
 - Monitoring and reducing energy use
- Drive innovation & product development... such as:
 - Generating entirely new business models such as Uber, SkyScanner and AirBnb
 - Influencing design to deliver features that customers want by analysing their comments/sentiment – for instance, incorporating such customer feedback customer/user engagement in the design and development process allows the elimination or reduction of a number of risks and increases the odds of market success.

- Personalised medicine by delivering treatments most appropriate to the patient. For example gene testing of transplant patients to identify the probability of a particular patient rejecting a transplanted organ.
- Bringing data together across the supply chain and enhancing innovation across various organisations such as using predictive analytics to inform inventory control and delivery times

- Predict trends/patterns... such as:
 - Traffic data informing the introduction of more efficient bus routes
 - Customers increasingly buying through new channels
 - Customer preference for particular product variants, eg colour or option configuration
 - Public health data capture to predict disease outbreaks and help ability to manage them
- Detect fraud and to reengineer business processes... such as:
 - Recognising unfamiliar behaviour patterns and flagging them

POWER OF INFORMATION

The potential benefits to the Scottish economy of data are substantial - estimated to be worth £20 billion in Scotland by the end of 2020.

Those who can take advantage of data could see benefits in terms of development, improvement and boosting revenue by reducing costs.

Many organisations already understand the powerful role that data plays in reaching their strategic goals and are implementing strategies to achieve this.

DATA ISN'T JUST FOR BIG BUSINESSES

SMEs can and should get in on the data act.

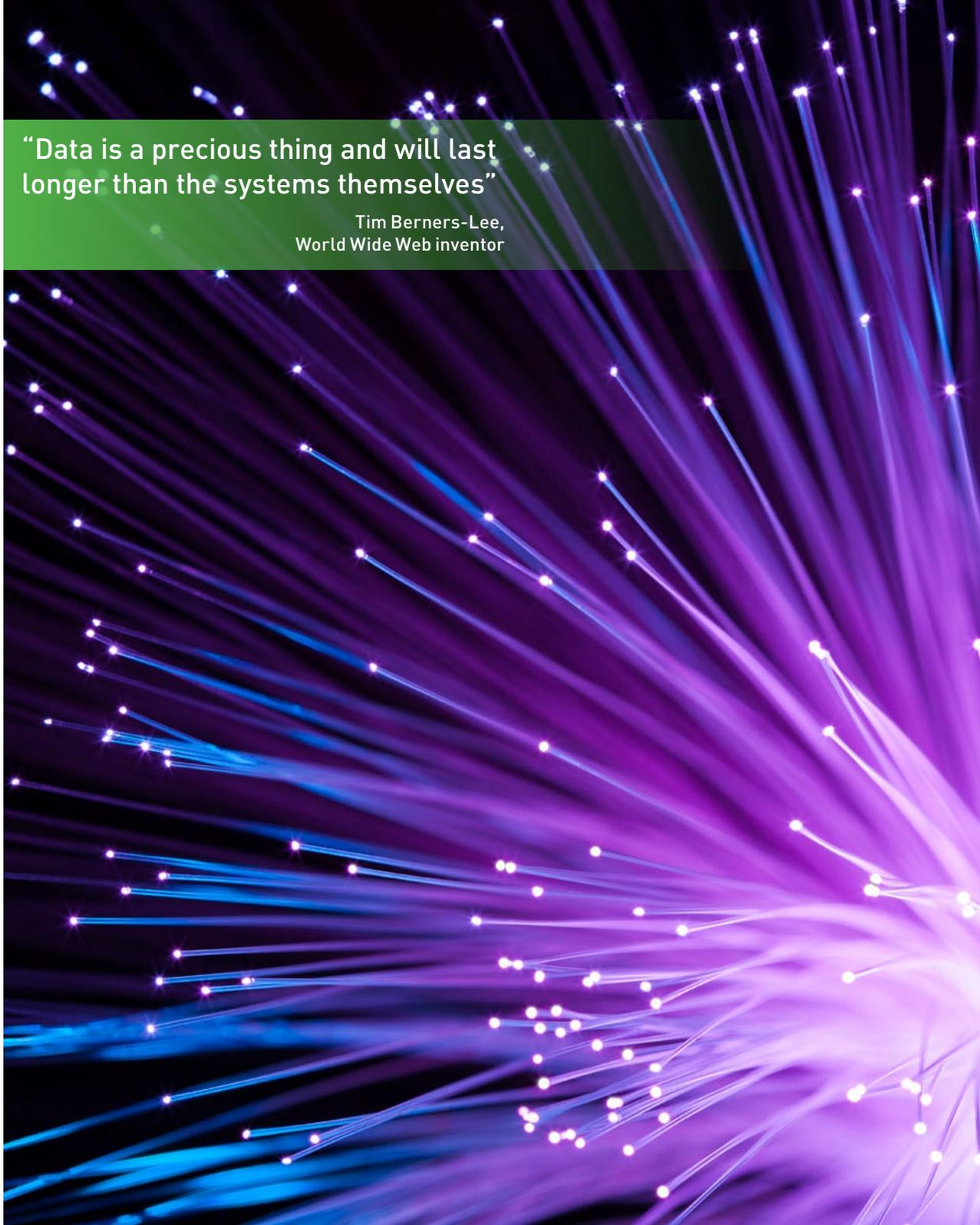
Even a very small company can sift through social media feeds to find out more about customer sentiment than they ever could using a marketing survey for instance.

Businesses are encouraged to develop a data strategy and conduct internal data audits to future-proof their business. There is a key opportunity to build a foundation in skills and experience to be ready to invest in the near future.

The cost of implementing a data strategy has to be considered both on the technical side - with data integration, management and storage as well as operationally. New skills will be needed and data scientists are already increasingly sought after.

Data collection and storage can be expensive but SMEs can use cloud computing. ICT giants like IBM, Microsoft, Oracle and Amazon are offering data infrastructures and advanced solutions on a pay as you go basis which makes the opportunity much more accessible.

If SMEs fail to recognise the importance of data now they may lose out to competitors who are already using it to gather insights and getting ahead of the game.



“Data is a precious thing and will last longer than the systems themselves”

Tim Berners-Lee,
World Wide Web inventor