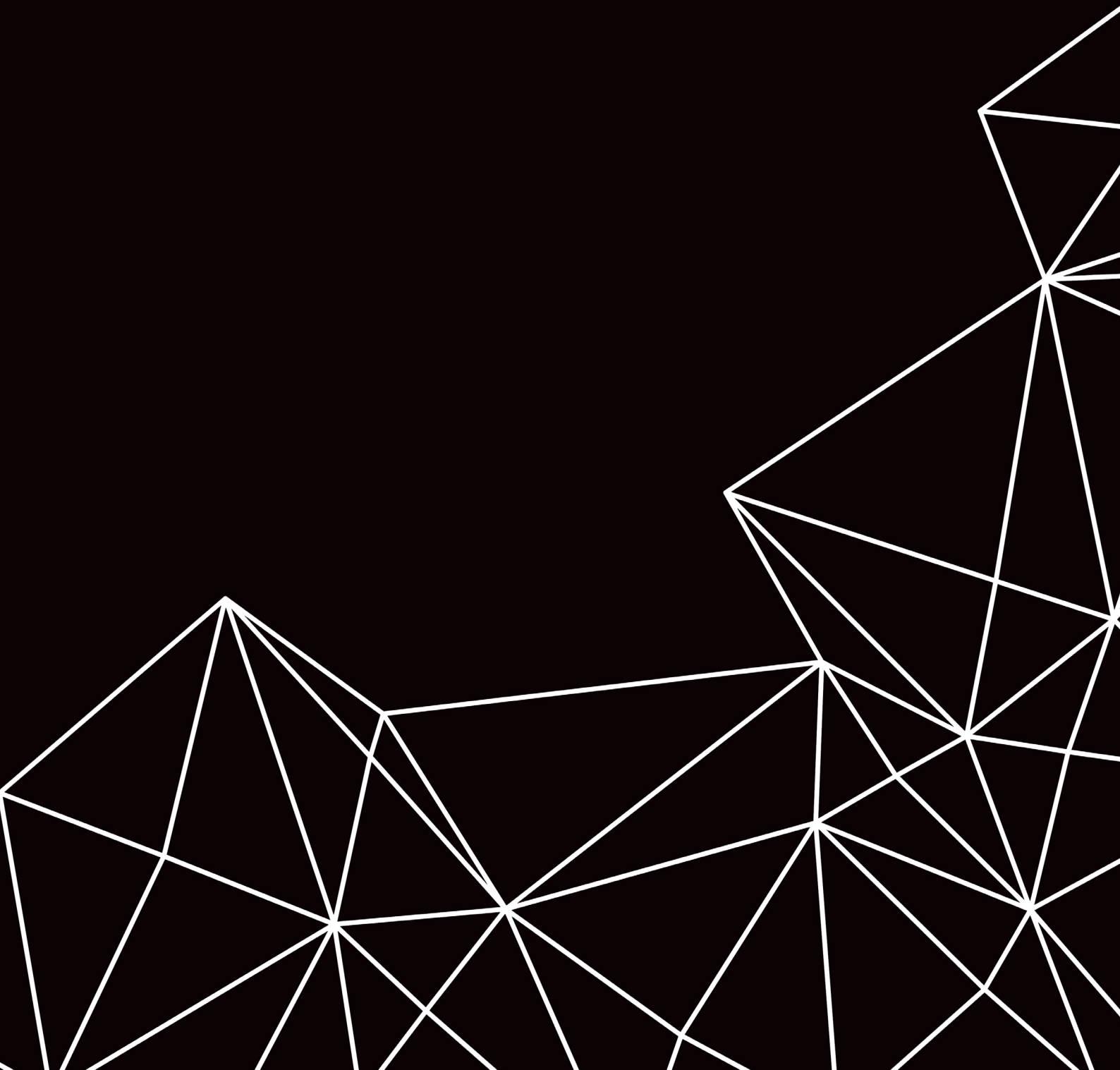




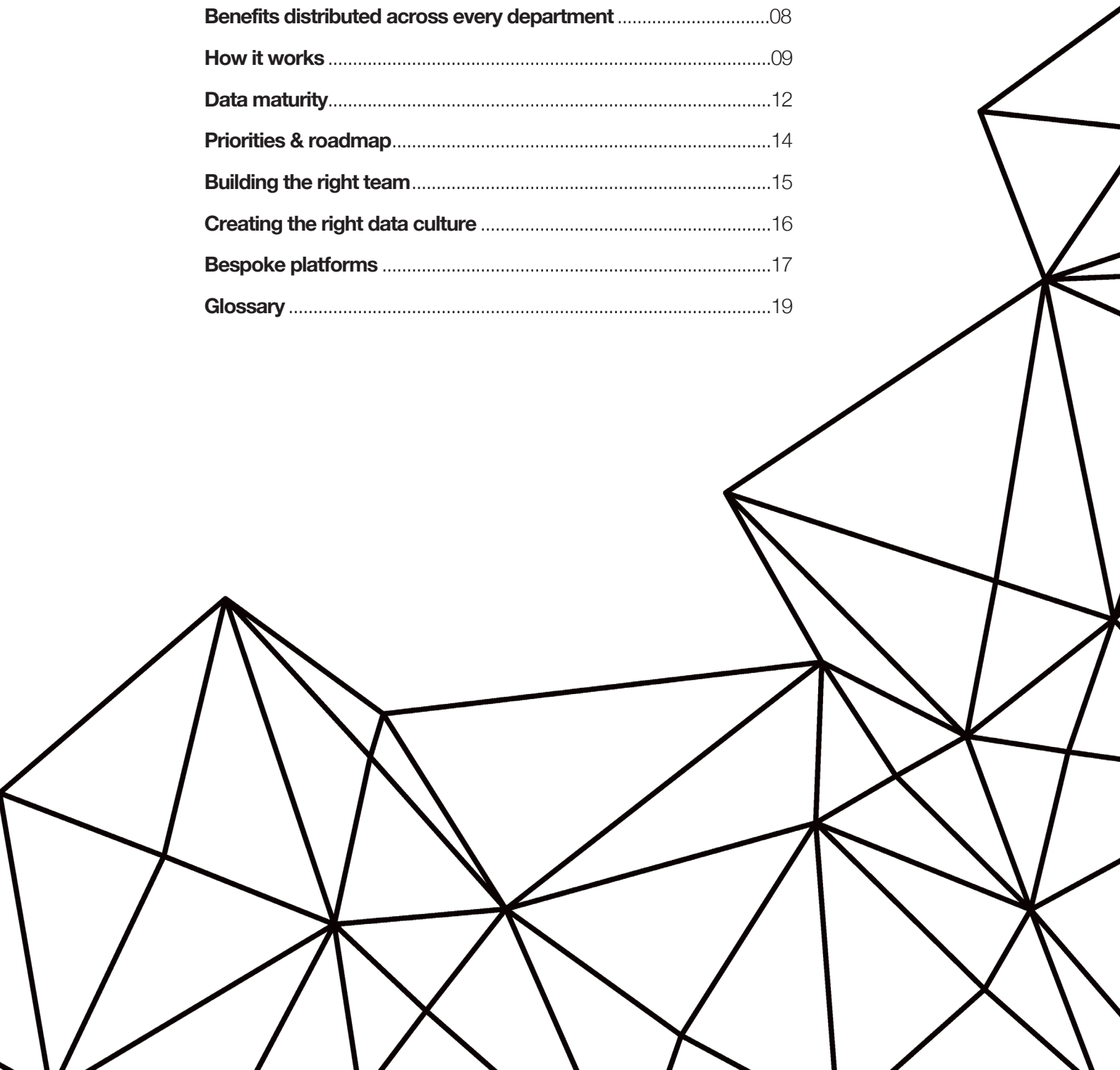
Introduction to Analytics for Business Leaders

QuantSpark's guide to high impact analytics deployment
and why effective analytics is your value creation strategy



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Foreword

A blueprint for data science success

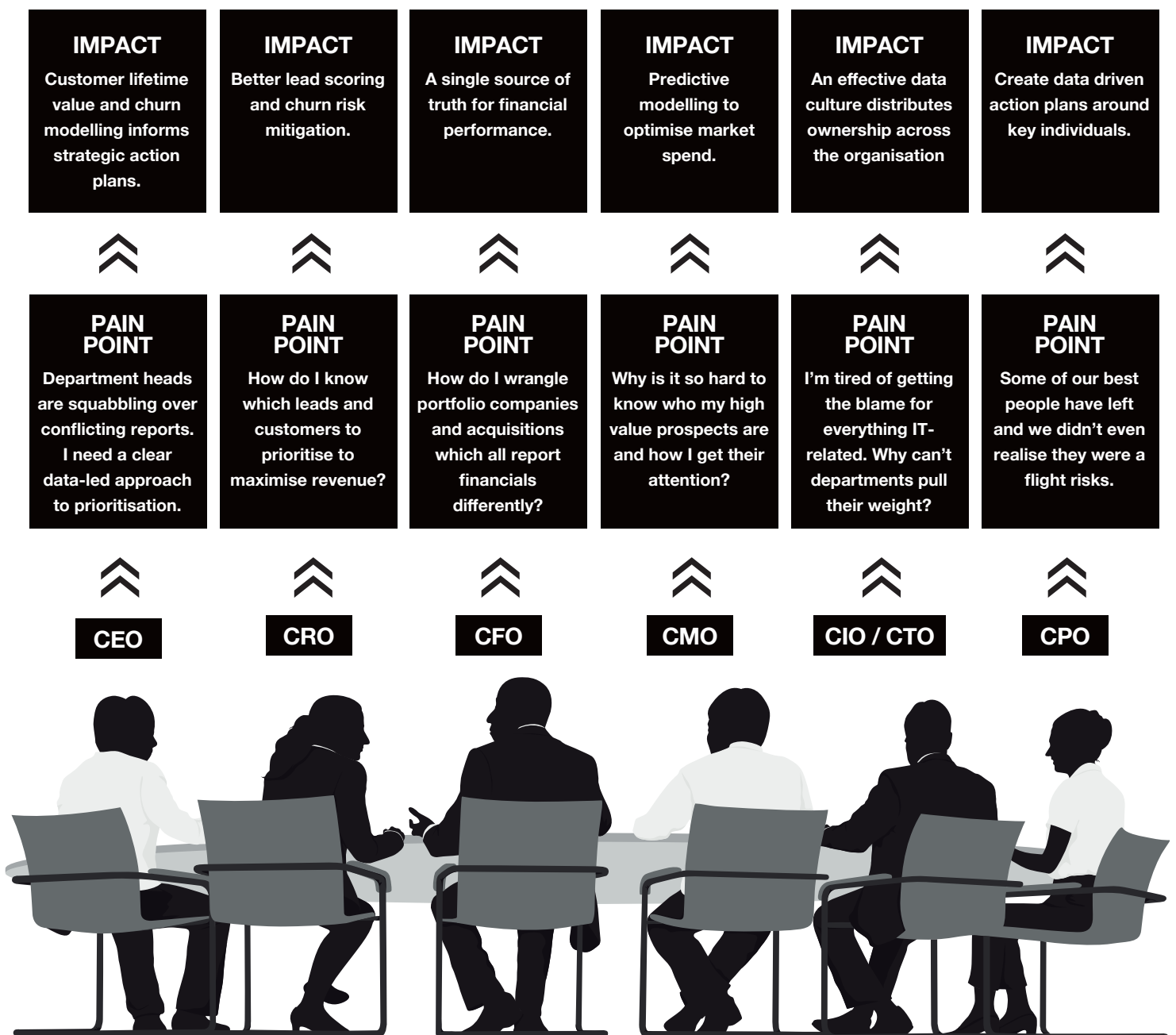
This short guide explains data analytics in plain English. It sets out how CEOs and business leaders can lead data initiatives which result in rapid, measurable ROI.

Maybe you're a data sceptic, fed up with IT projects that over-spend and under-deliver. We'll seek to convince you that the cost of not investing could be far higher, while demonstrating ways of safeguarding the investment.

The guide contains actionable, practical steps to help you create an effective data-led organisation. Give us fifteen minutes of your day and we'll explain:

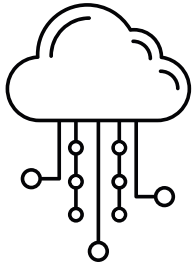
- **How data analytics can be used across the organisation to benefit individual departments and the company as a whole.**
- **Why data projects go wrong and what to do about it.**
- **How to assess your organisation's data capabilities and chart a path to data maturity.**
- **How to prioritise initiatives and create a robust delivery roadmap.**
- **What a good data culture looks like.**
- **The benefits of bespoke, custom data tools.**

Analytics across the organization

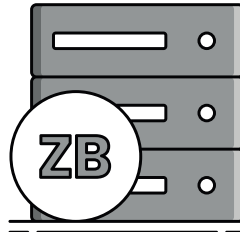


Data in numbers

A world of data



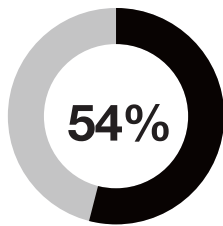
181 million: how many years would it take to download all the data from the internet (Unicorn Insights)



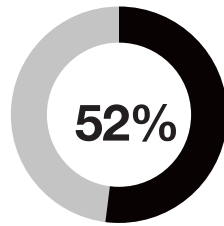
180 zettabytes (that's 180 trillion gigabytes): the total amount of data being consumed globally in 2025 - up from 64.2 zettabytes in 2020 (Statista)

Businesses and data analytics

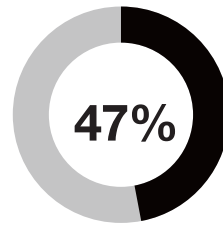
Benefits reported by businesses which have invested in data analytics (BARC):



54%: enhanced operational process control

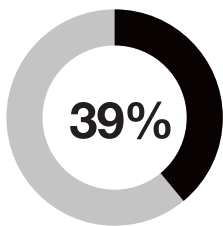


52%: better understanding of consumers

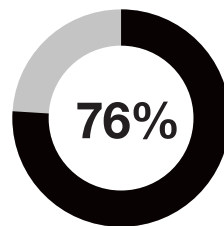


47%: effective cost reduction

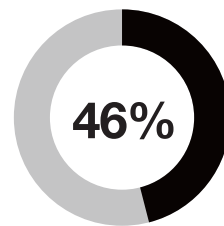
Obstacles to successful implementation (Sigma):



39% "not totally sure" what it means to be data-driven



Three-quarters (**76%**) of data experts spending half their time on ad-hoc reports



46%: say lack of general business knowledge gets in the way of delivering insights

Market value



\$274 billion

value of big data market in 2022 (Statista)



\$62 billion

market value for data analytics in banking by 2025 (Soccer Nurds)



\$67 billion

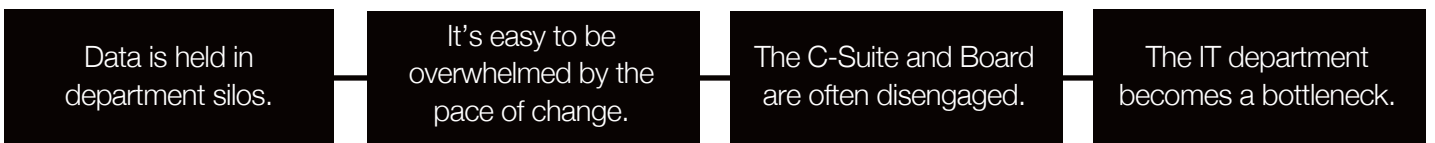
market value for data analytics in healthcare by 2025 (Globe News Wire)

Summary

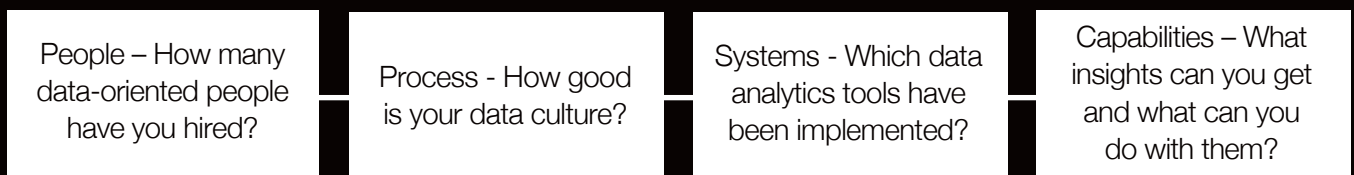
An effective data strategy **fuels value creation by improving decision making** across the business.



But implementing the right **data strategy is rarely straightforward.**



1. Companies should **first assess their data capabilities.**



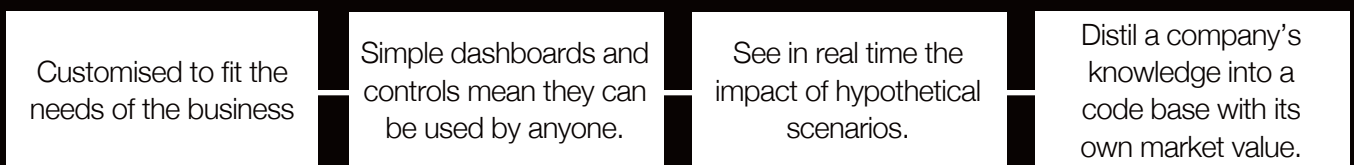
2. Business leaders should **prioritise data initiatives.**



3. **Create the right data culture** to safeguard return on investment.

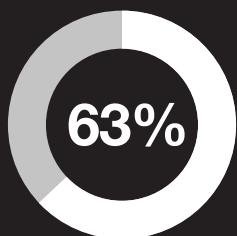


4. **Bespoke data tools offer faster results.**



Introduction

The application of data to problem solving and decision making is the single most important innovation of the last twenty years. Rooted in hard science, it can seem intimidating to business leaders, but your company's future depends on it.



businesses with a Chief Data Officer (CDO), a fivefold increase since 2012 (12%) (Wikibon)

Data strategy is an existential priority for every business.

Another technological revolution is powering innovation and growth. Vast riches once came from tapping and exploiting fossil fuels. We now use applied science to unlock critical insights from vast volumes of data. And just as oil produces everything from petrol to plastic, toothpaste to tires, the applications of data analytics are endless.

Within a few short years data science has transformed the way all types of companies learn about and interact with customers. As companies measure more, they discover new opportunities to drive revenue, efficiencies and productivity.

2.5 quintillion

Number of bytes of data generated by internet users every day (Data Never Sleeps 5.0).

There has never been a better time to create value through data.

The volume of available data is increasing exponentially every day.

Valuable new sources are emerging, from social media feeds to satellite imagery. As companies find ways to collect open source information like weather and web traffic, they are combining it with other data sets to create ever more meaningful insights.

Cloud technology has cut the cost of storage and processing. Off the shelf data analytics packages have lowered the barrier to entry from a skills perspective.

Business leaders who invested early in a data strategy have reaped the rewards. Reduced churn, increased revenues and an improved customer experience are just some of the benefits you can expect to see.

Introduction



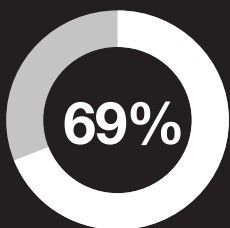
1 in 4: business leaders who gave up on getting an answer they needed because the data analysis took too long.

Like most good things, value creation through data doesn't come easy.

Data may be readily available. There are more tools to help make sense of it. None of this makes it easy to 'do'.

Business leaders can quickly feel lost in a sea of acronyms and IT-speak. The science involved can be intimidating to those with a commercial background. Some data analysts struggle to anchor projects in commercial realities, creating elegant solutions to the wrong problems.

Data projects must struggle for resource and headspace amidst a mass of competing initiatives, where everything is top priority.



businesses reporting improved decision making as a benefit of data analytics.

Change is hard. But not as hard as the alternative.

Many in senior management, stung by a series of expensive IT projects that flattered to deceive, are wary of data initiatives. Yet the alternative – not investing in data – is not an option.

Data analytics help you predict what customers will want next, which ones are the highest value and, of them, who is likely to churn. It makes sense of the most tangled organisations and where efficiencies can safely be made. It optimises marketing spend and clears up financial reporting.

Put simply, data is your value creation strategy.



***“Business leaders rightly talk about ROI as the basis for evaluating data analytics projects. But what some don't understand is the opportunity cost of not investing in it.*”**

Adam Hadley, CEO, QuantSpark

How data analytics work

Data analytics is the process of extracting actionable insights from terabytes of data to help you make better decisions and create more value for the business. Here's how it works.

In a hyper-connected, increasingly digitised world, data is everywhere. When a customer clicks on a link, uses your app, makes a purchase or talks to a customer service rep, they leave a permanent record.

Add to that every action and decision taken by your staff, supply chain and marketing partners. And that's just the data generated by your business and those in its immediate orbit. Alternative sources with commercial benefit include satellite imagery, digital publications and periodicals, foot traffic and social media feeds.

Raw data doesn't present insights all by itself. Just as crude oil must be processed to create its lucrative derivatives, data must be carefully managed and manipulated to create value.



Benefits distributed across every department

Data analytics transforms every department, allowing senior executives to exploit opportunities, course-correct in real time and plan future scenarios. Organisation-wide data analytics cut through the politics, inform decision making and align teams around common goals.

	PAIN POINT	ANALYTICS USE CASE
CEO 	“Department heads are squabbling over conflicting data. Silos, a lack of data quality and contradictory reports and KPIs mean I get a different answer every time I ask a simple question. “On top of that I don’t have a clear data-led approach to prioritisation. What is the most effective marketing strategy? Who are my high value and high-risk customers? Which product lines have	• Churn modelling informs action plans to prioritise and keep high value customers. • Customer lifetime value modelling names high value customers. • Data reconciliation gives customer and product level views of P&L. • Cost per acquisition analysis and modelling to optimise marketing spend.
CRO 	“I only have so much time and resource. How do I know which leads and customers to prioritise to maximise revenue? What is the data-led action plan for key accounts? “It’s easy for people to see lost opportunities and point the finger at me, but what was I supposed to have deprioritized to create space for it? How do I know what we should have done differently?”	• Better lead scoring. A data driven approach to prioritise sales leads according to a predictive model of customer lifetime value. • Churn risk mitigation. Prioritise effort on existing customers who may leave, according to a predictive model of churn risk. Prioritise this list against predicted customer lifetime value.
CFO 	“My highly qualified (not to mention expensive) team spends far too much time pulling together reports, and not enough time on activities that add value. Adding insult to injury, I still lack a granular understanding of my P&L, leaving me exposed. “I’m responsible for a group of different entities, portfolio companies, acquisitions and merged business. They all report financial data differently, using different systems. I just need one single view of business performance.”	• Data analytics means a single source of truth for financial performance. P&L reporting can easily be sliced and diced by product, business unit or customer. • Data is collated, cleansed and reconciled automatically, with interactive dashboards for analysis and reporting. • Non-technical staff can interrogate data themselves for better decision making, rather than make ad-hoc, time-intensive requests of the IT team.

Benefits distributed across every department

	PAIN POINT	ANALYTICS USE CASE
CMO 	"I'm still making crucial, expensive decisions based on gut instinct. I just don't have reliable data to fall back on. "Why is it so hard to get a simple answer a straightforward question: 'who are my high value prospects and how do I get their attention?'"	• Predictive models help optimise market spend by identifying the most effective marketing channels for each customer group with cost per acquisition analysis for each. • A data-led approach to segmentation groups customers more effectively and highlights targeted strategies to incentivise purchases. • Basket analysis predicts what customers will want to buy next, prompting automated marketing email and social campaigns.
CIO / CTO 	"I'm tired of getting the blame for everything that goes wrong. Departments keep adding different toolsets and systems without proper consultation. This leads to siloes and contradictory data, making a monster task of interrogating data to get reports. "Contradictory data along with different reporting cadences and data currencies mean we don't have a clear line of sight from our customer back through to the organization."	• An analytics diagnostic evaluates the state of your data infrastructure and creates a costed, prioritised roadmap to unlock the potential of data within your organisation. • Data warehouses provide a single system where data is cleansed and merged. This establishes a single point of truth for reporting purposes. • An effective data culture distributes ownership across the organisation and creates data evangelists within every department.
CPO 	"Some of our best people have left and we didn't even realise they were flight risks. The opportunity cost of losing key talent is having a material impact on business performance. "Every department is demanding more headcount and increasingly expensive hires. How do we thread budget forecasts and team requirements to resource demand, in a way that factors in time to hire and onboarding?"	• Understand what drives people to leave and what indicates someone is considering moving on. • Predictive models can raise flags on key talent flight risks allowing you to create data driven action plans around key individuals. • Align budget forecasting to data driven headcount planning and factor in the time taken to hire, attrition and recruitment capacity.

Data maturity

The key to building an effective data strategy is to accept that you're on a journey. Whether you're just starting out or looking to fine-tune a sophisticated operation, keep an eye on your strengths and limitations.

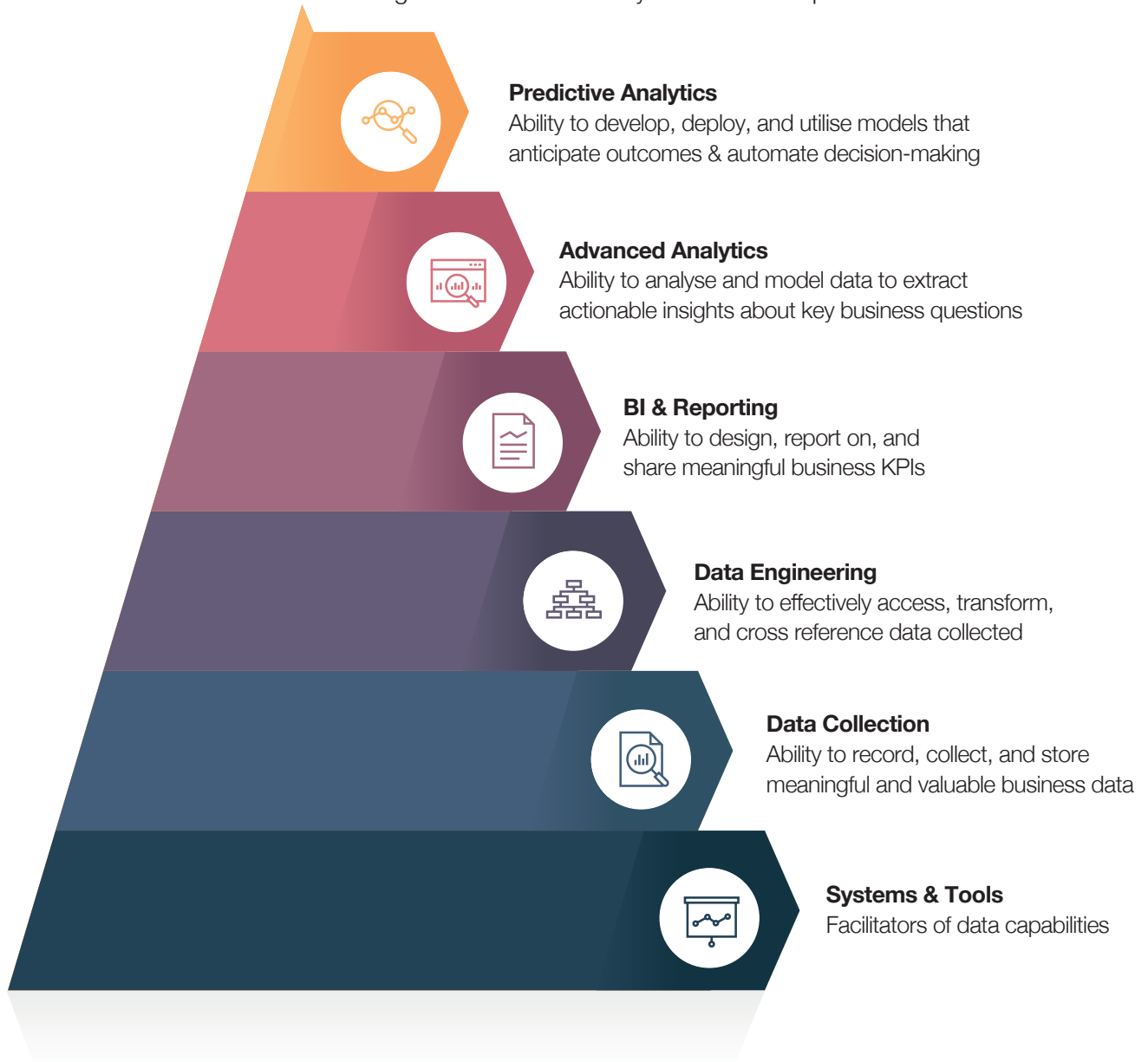
It's crucial to know where your company sits on a data maturity scale. This will help manage expectations internally and make sure you're set up to succeed in the next phase of your data deployment. There are four main ways to measure data maturity:

People | Process | Systems | Capabilities

	People How many data-oriented people have you hired and what is their focus?	Process How good is your data culture?	Systems Which data analytics tools have been implemented?
MATURITY	1 No dedicated data analysts (though there is some use of data in departments like marketing or operations)	Ad hoc reports created from department data held in silos.	Data collected and analysed within packaged analytics tools, SaaS platforms, free products (e.g. Google Analytics) and spreadsheets.
	2 Some experienced data analysts hired by and working exclusively for data-driven departments (e.g. marketing)	Reporting and analysis still done within departments, with some centralised processes (e.g. KPI reporting) beginning to happen.	Per level 1, with the introduction of a data warehouse to house basic transactional data.
	3 Organisation starts to build central team of engineers, analysts and scientists.	Reporting and analysis led by central team, using the data warehouse for aggregation and modelling.	Per level 2, with reporting done within a business intelligence (BI) tool.
	4 'Hub and spoke' model with central team directing data-literate colleagues in individual departments.	Per level 3, but with much better communication with colleagues in other departments.	Per level 3. Initiatives underway to build some basic custom tools.
	5 Highly skilled data practitioners are distributed throughout all departments.	Teams and leaders able to self-serve, interrogating data for instant insights.	Custom products have replaced most generic tools. A sophisticated data lake and warehouse feed BI and other systems.

Capabilities

The fourth way to measure your level of data maturity as an organisation is to assess your technical capabilities.



Priorities & roadmap

Knowing you need to implement or improve your data strategy is one thing. Getting it done is quite another. To do that, you'll need to prioritise a list of activities and draw up a roadmap to delivery.

If there's one thing leaders don't lack, it's ideas to improve the business. At any time an organisation might be rolling out a new CRM, shifting its IT operations to the cloud, restructuring its workforce or merging with another company. Often, it'll be doing several at the same time.

It would be irresponsible to preach the benefits of data analytics without recognising the operational impact. It's easy for a company to be overwhelmed by the pace of change. This leads to abandoned projects and a wariness of committing to future initiatives.

This is of course no reason not to move forward – the future of the business may depend on it – but any plan must be achievable. The answer is to prioritise, then plan accordingly.

1. Strategic imperatives

Start with a clear idea of who the company serves, what it does for them, how it's different and why it exists. The answer to these questions informs business strategy, which in turn should dictate which data initiatives should take priority.

Outputs

- **Summary of business strategy and how it is operationalised across the organisation.**
- **Outline of where better decision making will have most impact.**



Impact

- **Understanding of how data analytics will advance the business strategy and where it should be focussed in the short, medium and long term.**

2. Capability assessment

Before a plan can be created, you must first know what is feasible. Begin by assessing the skills and experience available within the organisation. Be careful not to focus entirely on the IT department as the data strategy will rely equally on sales, marketing, engineering and other teams. Look into any previous data projects and see what lessons might be learned.

Outputs

- **Assessment and benchmarking against peers and competitors.**
- **Adequacy of capabilities and past efforts to drive value creation.**



Impact

- **Objective assessment of data strengths and weaknesses.**
- **Understanding of capability and complexity of solution delivery.**

3. Gap analysis

Now you know what the business needs and what the organisation can and can't deliver, you can draft a list of activities. These will include technical and practical recommendations to plug key skills gaps across the organisation. The purpose here is to identify opportunities and the risks and barriers that might get in the way.

Outputs

- **Recommended quick wins to support project deployment.**
- **Identify and quantify upsides and additional value creation levers.**



Impact

- **Understanding of next steps and requirements for project implementation**

4. Roadmap

Finally comes a list of costed initiatives prioritised in order of their ability to create value and advance the business strategy. Depending on the organisation's data maturity this will feature foundational work (a plan to collect and aggregate relevant data), advanced analytics (machine learning to predict behaviours and optimise processes) or data-driven products (custom tools to automate insights and make them widely available).

Outputs

- **Prioritised project initiative list.**
- **Roadmap / timeline for deployment over 3, 6, 12, 24 months.**
- **High-level project plans.**



Impact

- **Clearly defined and prioritised roadmap of initiatives.**
- **Recommendations on strategy, approach and plans going forward.**

Building the right team

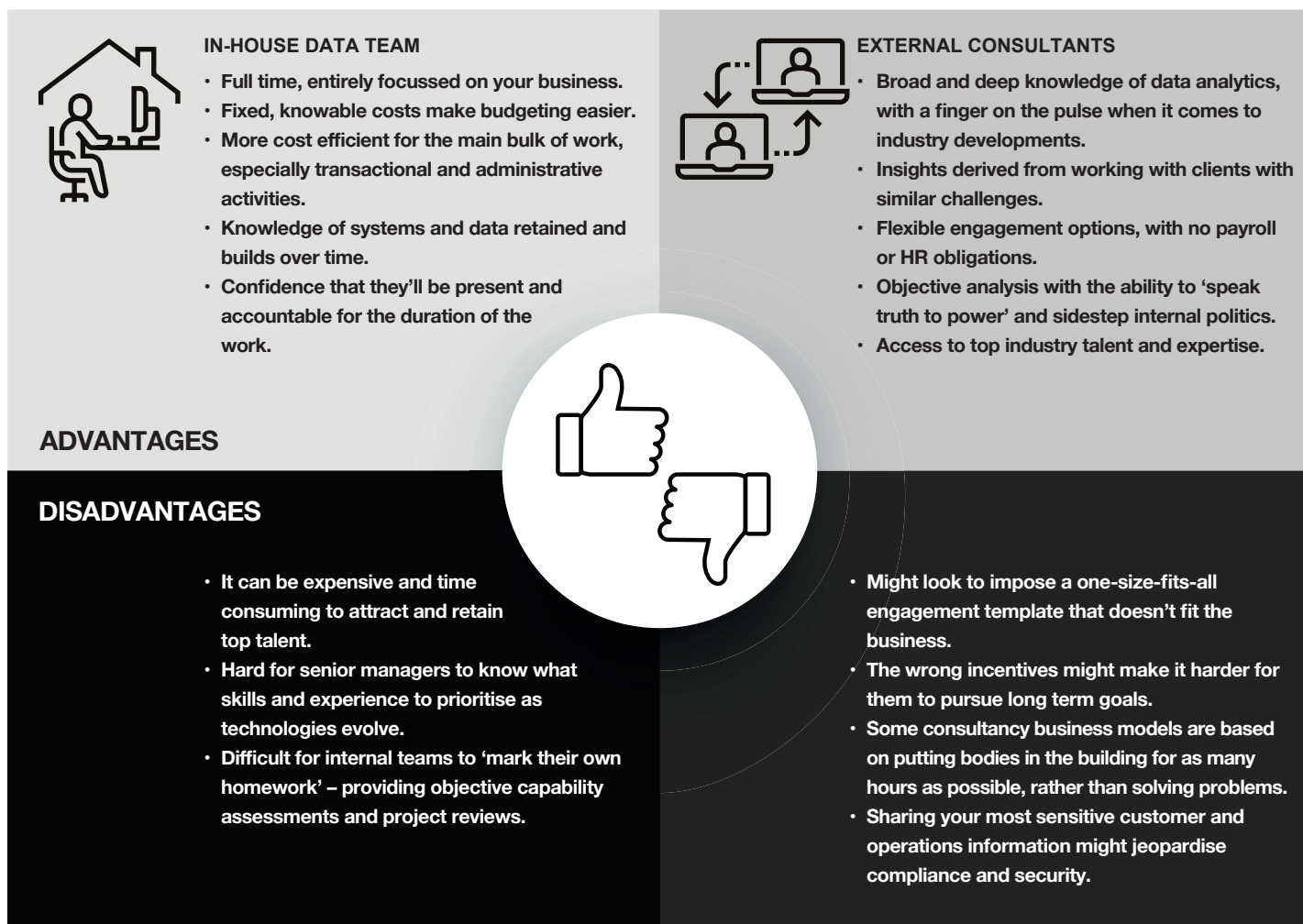
You've assessed your capabilities, matched data initiatives against business objectives and created an implementation roadmap prioritised by value. Now it's time to go to work.

The first question is who's going to lead the work? As with any aspect of the business, the options are to recruit or supplement an in-house team, hire external consultants or a blend of the two.

Each option has its merits. Internal teams are fully committed to the business and might provide more assurance around security and compliance. On the other hand, consultants offer objectivity and a broader perspective.

You can begin by answering a couple of basic questions.

- How much revenue at risk because of a faulty or non-existent data strategy?
- Do you operate in an industry which can likely derive great benefits from data?
- Do you have the budget to build capability in-house in the short term?
- Does the scale of the business warrant a full time, internal team?



Creating the right data culture

There's been much talk of toxic workplace cultures where competing incentives and big egos inhibit growth and destroy value. But what does a bad data culture look like and how can it be fixed?

Too many companies have seen mixed results from data analytics projects.

Often, the problem isn't technical, nor administrative, nor a lack of skills (though these often come into it). The overriding problem is in fact cultural.

How to recognise a bad data culture

When the costs of initiatives outweigh the benefits, you're likely suffering from a bad data culture. Common symptoms include:

- The IT department is blamed for poor implementation. They in turn point the finger at operational teams for supplying useless data. Communication between each side is poor.
- The C-Suite and Board are disengaged, with expectations resting solely on the CIO and / or CTO.
- Much of the investment is sunk into inputs – preparing data for analysis – with little value emerging from the outputs.
- Data is seen as an 'IT thing'.

Working towards a positive data culture

Here are some practical steps to improving that cost/benefit ratio. Some are straight-forward and process-driven. Others require behavioural change so will take time and dedication to take root. All are essential and should sit high up any business leader's task list.

1. Explain then enforce good data entry practices. No one enjoys recording information but each entry potentially reveals something important. How best to manage leads, offer discounts or engage with the customer, for example. Poor data entry by the individual leads to patchy, inconsistent data in aggregate. Or, in a data scientist's words: 'rubbish in, rubbish out.' Team leaders need to preach the value and importance of good data entry. This needs to be enforced with individuals responsible for recording information using a set of agreed rules.	2. Make it the CEO's pet project. It's easy to understand why the C-Suite might avoid a conversation around data. It can be intimidating for anyone lacking a background in maths or science. And they might have been stung by past IT projects which over-spent and under-delivered. Yet the CEO must overcome these doubts if the data culture is to improve. Why would a junior sales exec make an effort if the CEO isn't themselves capturing data and evangelising the benefits? For behavioural change to take root, it must be led from the top.	3. Distribute accountability. The benefits of data accrue to all, so the work that goes into making a success of it should be decentralised. That means creating a data advocate in every team, responsible for preaching its benefits to colleagues and upholding their data commitments. Management should create intra-team forums to start conversations around data. Data champions can share insights and ideas for future initiatives and use cases.	4. Develop a common language It's essential that the organisation bridges the gap between IT and the rest of the business. Colleagues in engineering, technology, marketing and sales must ditch their jargon and agree a common set of definitions and terms.	5. Prioritise and fast track opportunities. There's nothing better to enthuse a team than showing them results. A series of sprints lasting two to four weeks can prove what data science can do to motivate people for the greater challenges that lie ahead.
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Building bespoke platforms

Bespoke data tools are more powerful than data warehouses, with faster results. They also democratise data analysis, distributing its benefits across the business.

Data science is the key to better commercial decision making. That's why many businesses have begun ingesting information from spreadsheets into a data warehouse which allows for more sophisticated analysis. This forms the basis for delivering actionable insights.

However, taking this step presents new challenges. Data warehouses are complicated systems and inaccessible to the casual business user. They must be maintained and operated by experienced data scientists with proficiency in SQL, Python and other technologies.

This leads to a big bottleneck, with senior execs clamouring for answers from an overworked, under-resourced data team.

Simple questions - more complicated than you think

Let's take a scenario. The CEO has a straightforward question: are we winning more customers than we're losing? She calls the data team and asks them to find the answer from the company's expensive new data warehouse.

The question might be simple, but extracting the right answer is anything but. A data scientist must make several assumptions on the CEO's behalf: what's a customer? How do we define churn? What if they came back a week later to buy a different product? There could be many more.

Each of these assumptions must be converted into a script to query the data warehouse. Each script takes time to write and each output must be validated. Checks also have to be made on the cleanliness and consistency of the data in the warehouse.

Two weeks later, there's still no definitive answer. Frustrated, the CEO moves on to other concerns with a black mark left against her demoralised data team.

A proprietary data platform for long term gain

Data warehouses and packaged analytics products will only get you so far. Bespoke tools are customised to fit the unique needs of an individual business and can be geared to address specific commercial challenges, using agreed definitions and familiar language.

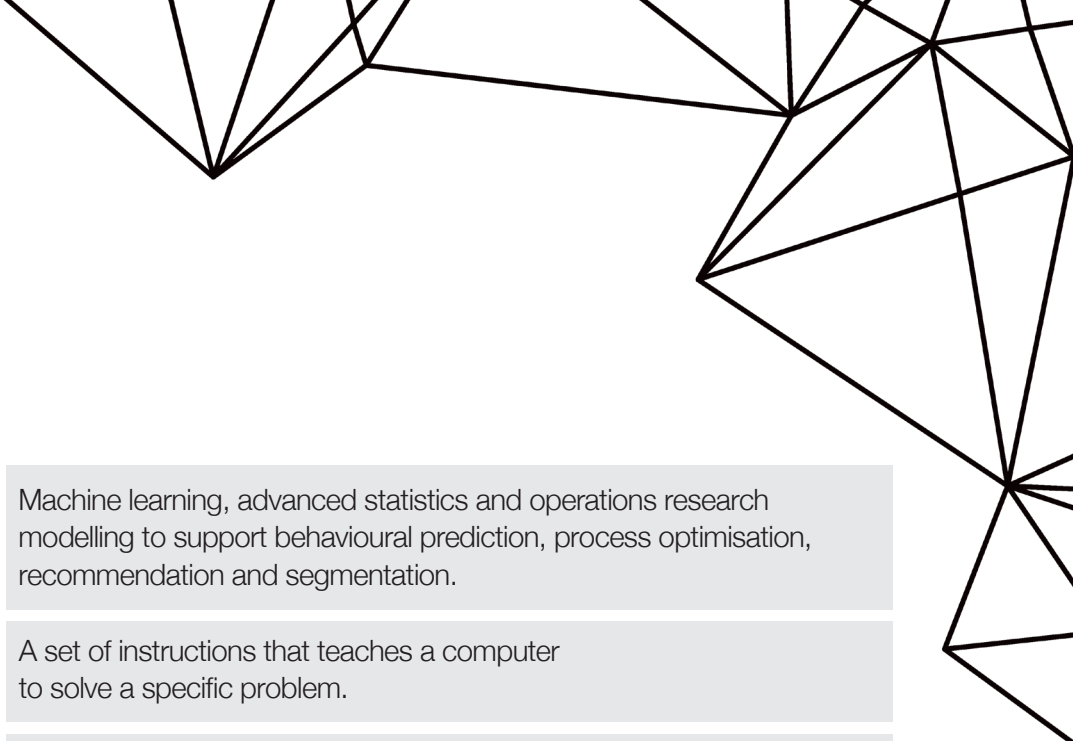
Most importantly, custom tools can be used by anyone. Simple dashboards and controls mean those with the right credentials can interrogate the organisation's data and find insights in minutes. Imagine the complexity of an oil tanker managed with the simplicity of a Tesla.

Those assumption scripts that cause such headaches for data scientists can be baked into the platform's design. That means general business execs can find simple answers to their questions and see in real time the impact of altering one or more of the assumptions.

This changing of variables 'on-the-fly' just isn't possible with a data warehouse. The same work would take days if not weeks of a data scientist's time.

Beyond simplicity, there are several additional benefits.

- **Scope and context.** Proprietary data can be complimented by open source data sets for pinpoint insights on a much wider canvas. Add real-time satellite tracking, social media sentiment analysis, computer vision or Google search patterns to the analysis.
- **Speed and scale.** Run hundreds of scenarios and map thousands of configurations in minutes. Predict what would happen if you reduced headcount or acquired a business.
- **No more errors.** Bespoke platforms are as reliable and accurate as they are fast. A single source of truth for the whole organisation, with no chance for a sleep-deprived analyst to key in flawed formulae.
- **Monetisable IP.** The platform distils a company's knowledge into a code base which is reproducible, extendible and valuable.



Glossary

Advanced analytics	Machine learning, advanced statistics and operations research modelling to support behavioural prediction, process optimisation, recommendation and segmentation.
Algorithm	A set of instructions that teaches a computer to solve a specific problem.
Machine learning	The creation of algorithms to model a system based on historical data.
Data	Facts, statistics or pieces of information – usually in the form of a number.
Data analytics	Systemic analysis of data to discover, interpret and communicate meaningful patterns. Normally used to improve decision making based on historical and predictive insights.
Data engineering	An architectural approach to plan, analyse, design and implement data analytics.
Data lake	A place to store data in its raw, unstructured state.
Data products	Bespoke analytics platforms tailored to the needs of an individual business.
Data science	The use of scientific techniques, processes and systems to extract insights from structured or unstructured data.
Data warehouse	A central repository of data from one or more sources. A place where data can be merged and cleansed for analysis.
Foundational analytics	Data architecture, data transformation logic, and visualisation analytics to provide actionable insight
Open source	Data that's freely available for anyone to use or republish.
Predictive modelling	The development of statistical models to predict future events.



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