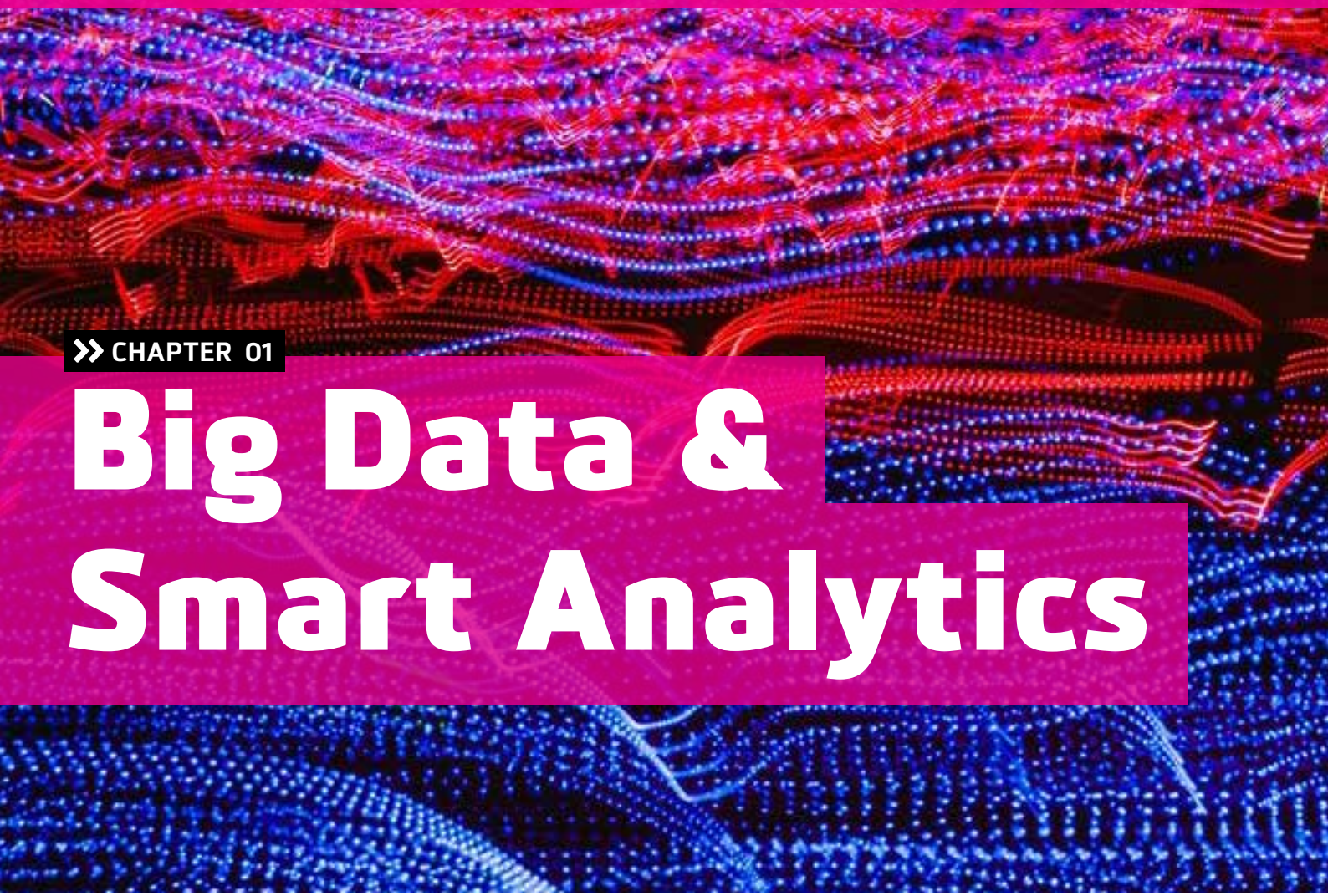


» CHAPTER 01

Big Data & Smart Analytics

BIG DATA & SMART ANALYTICS IN PLAIN ENGLISH: Using large pools of information and huge amounts of computer processing to do things not possible with small amounts of data.

One of the biggest challenges for retailers has always been understanding their customers. In many respects, the vast amount of data thrown up by the internet and mobile technology has been both a blessing and curse. Customers, suppliers, inventory information and, of course competitors, are now only a click away. But a business has to have the right analytics tools to slice up big data and make sense of it.

Mass data collection has been happening for decades across the aviation world where frequent flyer schemes have existed since the start of the 1980s. It wasn't until Nectar, the UK's largest loyalty scheme, was launched in 2002 that it became an accepted part of daily life. But in a world that's now permanently online, companies are looking to harness the power of big data in all manner of ways.

Everyone accepts that, in a world of multi-channel shopping and 24/7 media, tracking customer trends and online reputation is business critical. Data has long held the keys to online retail success and now, more than ever, bricks and mortar shopping centres have the chance to engage their tenants and customers together, commercialising previously untapped areas.

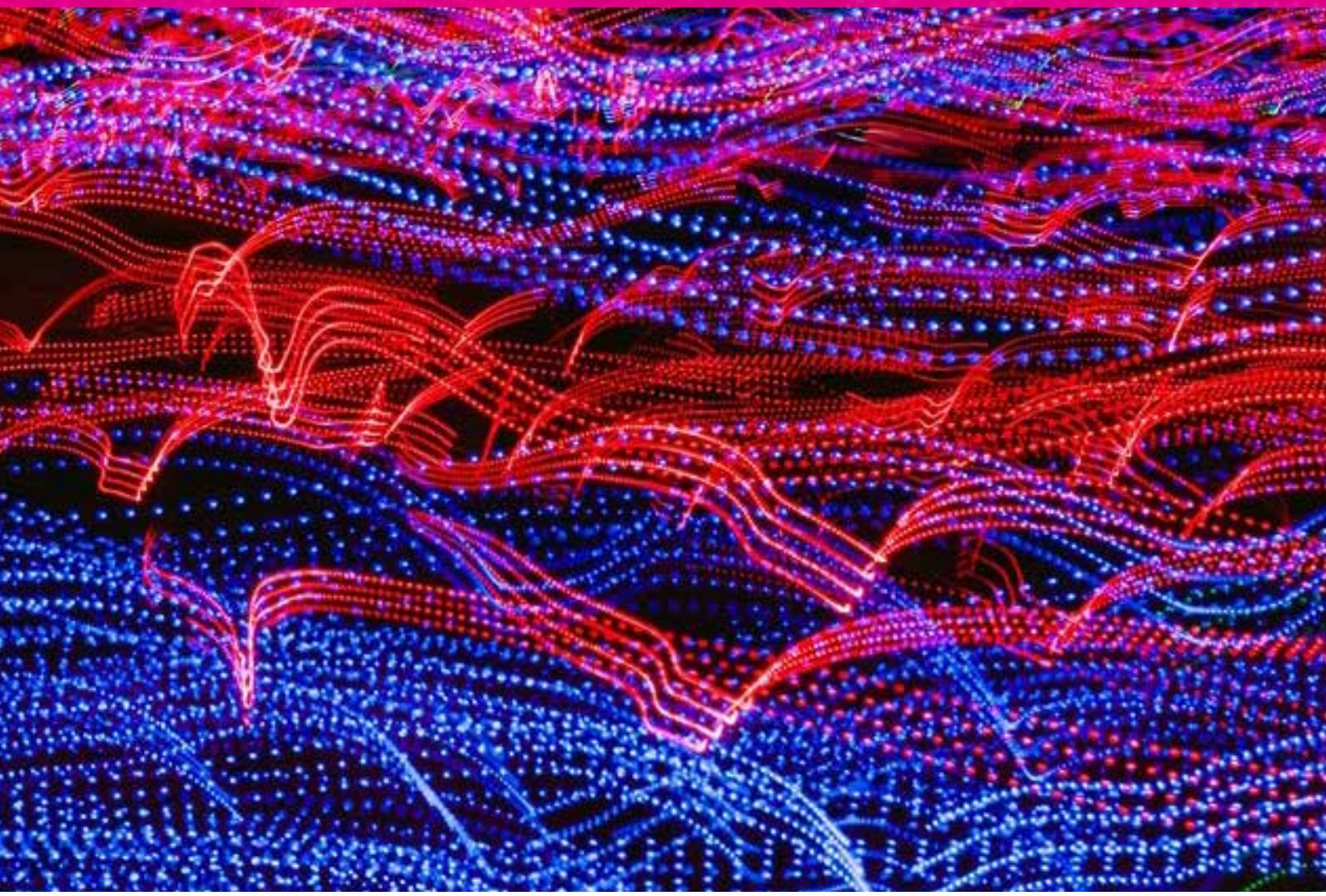
For example, the emerging trend of 'show-rooming' - a buzzword for people who test products in-store but buy them online - has proved painful, especially in the electronics sector. It is important for retailers to track this kind of shopper to understand and harness this behaviour and translate it into a sale, whether it be online or offline.

Everything occurring online leaves a trail. In the music industry, major labels are using Twitter information, combined with streaming and piracy data to inform their marketing strategies. The geographic location of anonymised online trends can be plotted, making it simple to identify locations where an artist may be popular but perhaps has had no official release.

With people now permanently connected – often through shopping centres' wi-fi networks - that same trail will be visible in the physical world.

By effectively aggregating and analysing data mined through bouncing signals off people's phones or maybe their Bluetooth-enabled jewellery, landlords can generate incredibly detailed pictures of customer behaviour. Such analysis can also be used to maximise space through improved store layout and staffing levels.

It can also enable better management of a retailer's stock distribution. In America, Macy's tracks its stock using radio frequency identification (RFID)



tags in a bid to unify its offer across physical and online platforms. Products can instantly be sold anywhere, even when out of stock in one outlet, by seeing where they are, maximising efficiency and customer satisfaction.

An individual's data can help provide recommendations and reviews, as well as guiding users to products, all via their mobile devices. But the fact that store cards (and the clear consent forms they provide) are not needed for much of this information has set alarm bells ringing with some pressure groups. Yet evidence so far suggests that customers may be willing to give their consent to tracking technologies in return for a rich, personalised experience, just as they have done with supermarket loyalty schemes.

From an operations point of view, big data is already employed in helping facilities managers monitor all aspects of their properties more effectively – in real time. For instance, temperature and lights can be altered at any point and malfunctions can be picked up on immediately. With many large retail landlords investing in old stock – and with rules around energy efficiency set to tighten in 2018 – sustainability may again shoot up the real estate agenda.

Intel partnered with Arduino to provide a cost effective development board which allows for the building environment to be controlled remotely via the cloud. The proliferation of tablets and smartphones means this can be done from anywhere, giving property managers more freedom and more control over their portfolio.

What's most appealing is the ability to predict customers' future behaviour. And with many new ways for shoppers to interact with brands - whether at home or in a mall - far more will be known. Many will no doubt value the more personalised service. But firms will do well to remember that the line between 'personal' and 'creepy' is a thin one.

> Now, more than ever, bricks and mortar shopping centres have the chance to engage their tenants and customers together, commercialising previously untapped areas.

Expert View
Semetric

Semetric is the UK and US-based data analytics business behind Musicmetric. It aggregates data and analyses trends from across the web to help the entertainment industry make better business decisions. The firm has come to prominence with Musicmetric in recent years, amid growing acceptance of a move towards streaming. Musicmetric products are used by major labels, artist managers and leading companies across the music industry. Semetric is now expanding into other parts of the entertainment business, including TV, movies, games and eBooks.

JAMEEL SYED
Chief Technology Officer, Semetric

How is big data relevant to the music industry?
Big data has come a long way since the business intelligence and data mining systems of the late 1990s. Technological improvements over the past twenty years have enabled companies to collect large amounts of raw data without the barriers of having big investment upfront. I think the music industry has particularly lent itself to big data because of its history with peer-to-peer file sharing sites. The music industry was the first to be disrupted by consumers both legally and illegally uploading content onto the web. The iPod was a key part of making consumers engage with digital media rather than physical media. In so doing, the way in which music was consumed was leaving digital footprints that could be tracked and analysed.

How is Semetric applying big data?
The improvements in big data collection enable us to have a more quantitative understanding of what is happening in our world. Take the entertainment industry: the way people interact with media, music and TV programs is increasingly taking place online. Individuals use YouTube to listen to music, watch pop programs and trailers. Just by consuming content like that or expressing themselves on social media, people are leaving their digital footprints. We can now collect raw data from these, boil it down, and make it available to entertainment executives.

Music executives can now make informed decisions when signing new artists. Because we have data assets that go back five years we can compare the early days of Adele's or Lady Gaga's popularity to a new artist starting today and see how well this artist compares.

How can big data be applied to sectors such as retail?
The retail industry has also been very receptive to big data. Loyalty cards were a key part of data-mining and data-analysis a few cycles ago. Many large firms now have incubator and VC mechanisms within their businesses, for managing and being involved in these new technologies. Supermarkets are also using in-store tracking to follow the movement of customers around their stores and determine where they spend time looking on shelves.

Compared to previous generations, there is now a lot more big data infrastructure software that can store data both inexpensively and on a massive-scale. At the cornerstone of this is Hadoop, the open-source software that allows tens of thousands of servers to work together to store, process and scale data reliably.

In addition, programmes written to run on Hadoop are written in exactly the same way, whether they are to run on a laptop, a few dozen machines, a few dozen thousand machines or a whole data centre. You can also use Amazon web Services (AWS) to rent hundreds of machines to scale up data collection, so it is no longer necessary to have your own data centre or numerous racks of servers.

What are the risks, in your view?
While physical retailers have been using data-analytics for years, it doesn't come without risks.

Firstly, the level of promise around big data means that, if companies are unable to see its immediate value in a project, they may become easily disillusioned and thus miss out on future opportunities to use big data in their stores.

Secondly, retailers must be careful in how they use data about their customers. Consumers are familiar with and happy to receive personalised coupons in the post, but may be uneasy with a similar offer being presented to them in-store using a "Minority Report" style display.

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Legal View

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Laura is the author of '*Handbook of Social Media and the Law*', published by Informa Law in November 2014. She has been extensively published on matters concerning compliance with e-commerce issues arising out of the Office of Fair Trading and Advertising Standard Agency guidelines as well as online revenue generation, defamation and reputational management.

We're all used to large numbers, but what exactly is big data used for?
We're increasingly finding that clients want to utilise large banks of data to advertise and interact with customers, to promote products and services to certain groups and drive sales. Big data, when appropriately aggregated and analysed, can be used to identify trends and interests and help integrate marketing campaigns and create detailed insights into a business.

But it's more than just a marketing tool, right?
Yes – it's an important point to stress that if used properly, this isn't just focused on marketing. It can help with defining a business strategy, determining how a business might want to develop; a business can look at certain trends and product updates, identifying potential growth areas; or help target support to different areas of the business which may be at risk.

Isn't this just the same as store cards?
No. Once upon a time, data was mainly collected through store cards. Now, with beacons, sensors, wearables and smartphones, there's potential for vast amounts of activity to be surveyed with or without an individual's consent which is clearly given when you sign up for a store card. Any business making moves towards the use and storage of big data must consider how it complies with the law.

Which legislation does this all fall under?
The Data Protection Act 1998 is a key piece of legislation that is currently undergoing discussion at the European level. There is a draft regulation coming out soon, perhaps late 2016. And there is discussion concerning technology such as biometrics, data-like tracking and use of beacons that are considered in the draft regulation.

Companies are paying closer attention to how these types of data might be used so they can understand their preferences and work out when consent is needed.

It will be a question of understanding how the data is anonymised and used. There aren't going to be terms and conditions at the door when you go into a shopping centre. However, there might be terms and conditions for the businesses within that mall or a straightforward 'accept' button on any corresponding app or when you accept to use their wi-fi.

What potential is there for big data to influence the design of shopping centres?
In terms of its wider use, there is potential to identify how to influence the physical design of malls by harnessing big data. You can use it to identify customer behaviour – for example, where a particular demographic congregate or which groups tend to shop when.

So what are the main risks?
The principle risk around anything data-related is people's expectation of their privacy. Something can be legally permissible but you still need to approach customers with a sense of responsibility. People need to feel that their privacy is being respected and that you are not using information for untoward purposes.

It's about looking at what is permissible within the realms of the law but also what is good from a business perspective. You may be able to collect and store lots of data but you also need to be careful not to damage your customer relationship or how people perceive your brand. The challenge here is to be commercially and legally aware and put together terms and consents that meet expectations about privacy, but also use data responsibly to deliver the best possible customer service.

And who owns it – the retailer, the landlord or someone else?
The question of who owns the data relates to intellectual property; there is no such thing as 'ownership' in data, yet agreements may exist around its transfer. When you create a database you can have database rights, but this depends on how much original work is in the construction of it. If there is programming within the database that makes it special or unique and provides a tangible value from that data, then you can qualify for a database right. It is not unusual to see companies sell and transfer data but they are mainly relying on intellectual property rights and the common terms in those agreements are that the data has been collected with consent.

The Information Commissioner in the UK has issued a guidance note called Buying and Selling Databases, which discusses some of these grey areas that might be of use to data-heavy businesses. I commonly deal with assessing if data has the right consent and what the risks are of transferring it, and how we can deal with that from a legal and commercial perspective.

This is a challenge because it's a crossover between business interests and meeting privacy laws that affect individuals and how we can raise knowledge and expectation of how their data might be shared. Often, businesses want to monetise their data and think that they can sell data without realising the legal issues behind it. However, this is not only a regulatory matter, but also a reputational issue, as businesses need to reassure customers that their data is being used responsibly. Commonly, this is done through privacy policies where you confirm that your data might be shared with third parties.

What considerations are there for senior teams?
Ensuring that people across a business understand consent and privacy rules, and bear these things in mind when designing a website or commissioning social tools is vital. It is useful to engage with IT and marketing teams to make sure that they have enough knowledge in order to highlight any red flags. It's important to plan a business strategy with the right consents.

Finally, do we actually need this much data?
Rather than just collecting lots of data that increase the risk of complaints about privacy rights we should aim for systems sophisticated enough to derive useful assumptions and trends and show retailers what is actually happening in the stores without creating needless risk.

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