# FINDING THE FISH IN AN OCEAN OF DATA

The automotive industry needs strategies for managing and monetizing big data

As everything in the auto industry – from customer needs specification to vehicle maintenance – develops a big data angle, it has become obvious that digital capabilities are the key to future value creation. But there is less certainty about how to succeed in the digital future.

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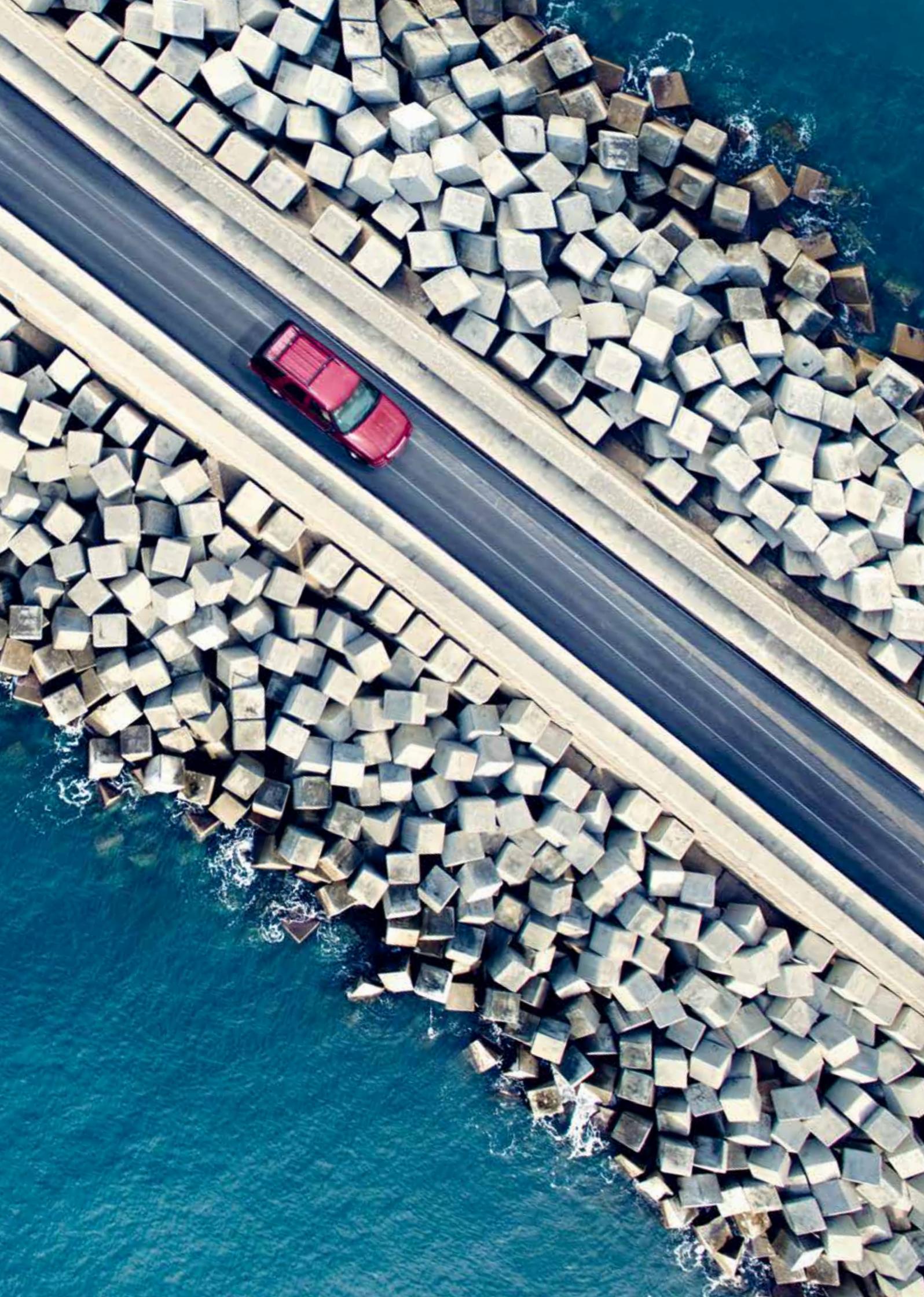
Material for the next stage in the industry's evolution is arriving in the terabytes of data generated by cars, drivers, manufacturing plants, and the entire automotive ecosystem. Players have started to consolidate oceans of data – the next step will be to go fishing. For that, they will need nets: practical, big data applications for their daily businesses. The revenue of big data and business analytics will grow from $130.1 billion in 2016 to more than $203 billion in 2020. That will mean quickly developing the capabilities and infrastructure to process and use the wealth of available data. As of now, however, the creation of value from big data is often not fast enough.

So, the automotive industry's biggest challenge is how to turn big data into valuable data – and make money out of it. The "fish" that are caught in these big data nets may include insights that result in higher revenues, lower costs, or contributions to higher profit margins. However, there is no magic wand. Smart data solutions call for hard work – and they will depend on the specific opportunities in different parts of the automotive value chain.

Most importantly, automakers need to focus on areas where they can start to generate incremental value. Then, once they have developed the capabilities to process data and extract value effectively, they can target large, disruptive value pools. The next stage is to figure out how best to do this. In some cases, the fastest way may be to recruit digital specialists – whether from within the firm or from the outside – but mostly they will have to train personnel in-house. The digitization of the auto industry is going to happen fast, and not having the right staff could result in lost time, as rivals rush out new innovations.

Fundamentally, there are three work streams to create value from big data:

- Use cases: Where to find and exploit the value for the business
- Data management and IT: How to analyze and process data with smart IT solutions
- People and organization: How to develop and organize the required resources

START WITH USE CASES

The first step is to identify the really significant use cases where big data and digital technology could create value for the end customer. Consider, for example, an interaction of the sales and used-car businesses: A driver might be ready to sell their existing car and buy a new one. This could mean both a new-car sale for an automaker and business for its used-car unit, including financing and maintenance services. To come up with the best offer for the driver at the best time requires a range of data on the condition of the existing vehicle, the used car market, and the driver's preferences and buying habits.
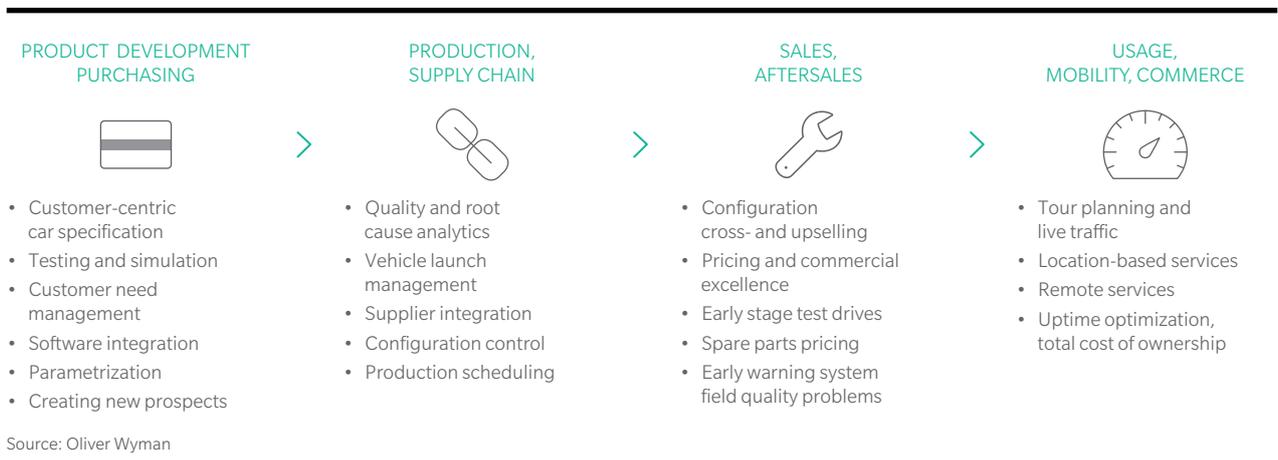
In sales and distribution cost, dealer margins account for about 30 percent of a car's list price. This is an obvious area where data can generate value. There are vast quantities of unexploited data points on price points and elasticities, promotion incentives, dealer margins per channel, and customer discounts. Analyzing and optimizing commercial patterns with big data algorithms could generate additional value of €500 to €1,000 per car, significantly improving the profits of both the automaker and the dealer.
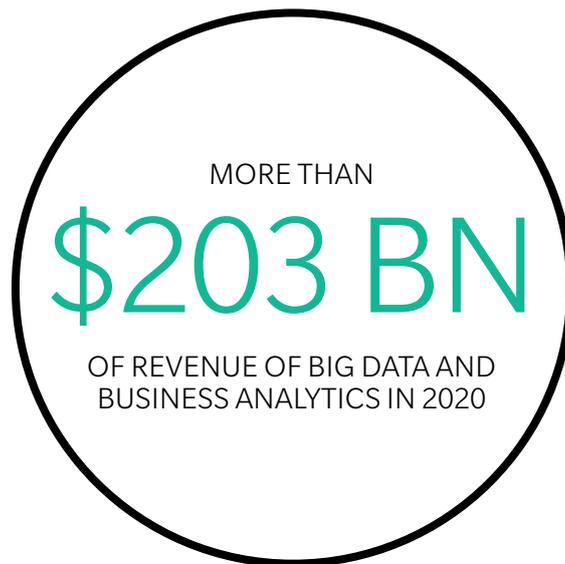
In production, success has long come from ad-hoc problem solving and firefighting, and from managing complexity through experience and good intuition. Plants have had to respond to late engineering changes, the growing number of vehicle launches, issues with supplied parts, or other unforeseen challenges. Mastering big data will revolutionize production, transforming hands-on management into highly industrialized clockwork, which is complex but controlled. Manufacturing data will be integrated from one end of the value chain to the other, immediately making issues and priorities transparent to all those affected.

Product development, engineering, and research have always depended heavily on data, parameters, and digital mock-ups of components. Yet these digital representations have only recently been enriched with information on their functionality, material characteristics, and related software. These data will enable amazing efficiency boosts in engineering: Quality issues in

EXHIBIT 1: BIG DATA USE CASES FOR THE AUTOMOTIVE INDUSTRY
There are a number of substantial big data opportunities along the value chain

PRODUCT DEVELOPMENT PURCHASING	PRODUCTION, SUPPLY CHAIN	SALES, AFTERSALES	USAGE, MOBILITY, COMMERCE
• Customer-centric car specification • Testing and simulation • Customer need management • Software integration • Parametrization • Creating new prospects	• Quality and root cause analytics • Vehicle launch management • Supplier integration • Configuration control • Production scheduling	• Configuration cross- and upselling • Pricing and commercial excellence • Early stage test drives • Spare parts pricing • Early warning system field quality problems	• Tour planning and live traffic • Location-based services • Remote services • Uptime optimization, total cost of ownership

Source: Oliver Wyman

MORE THAN

$203 BN

OF REVENUE OF BIG DATA AND
BUSINESS ANALYTICS IN 2020

a component will be detected before they result in a defect; and parts assembly will be simulated in advance. Most important, these will contain only the necessary functionalities.

Mobility services, a relatively new business, are entirely based on data. Whether a service hails a taxi, organizes ride-sharing, or finds a parking space, its essence is the matching of customer needs with the availability of transport and driver services. Managing vehicle capacity and understanding customer riding patterns is complex, and early field studies indicate that mobility services will only be profitable at a scale that provides full coverage for, say, a city. So the business case for mobility services will depend in large part on the ability to maximize car utilization by getting the most out of large quantities of data. (See Exhibit 1.)

SCRUM TEAMS AND DATA INSIGHTS

The opportunities are straightforward enough in theory, but implementation is highly complex. The basis for much of new value creation in the digital age will be customer information, plus vehicle data gathered from sensors and other measurement devices. This data will likely be gathered by different sources: the ownership history from a dealer, maintenance records from repair shops, and details of preferences from rental companies. Even if all the data are accessible, they likely come in different forms and formats, meaning the automaker will not be able to simply pour them into a spreadsheet to get the answers needed.

This means that the first, and key, enabler for a digital automaker is big data management. A manufacturer needs to build capabilities to link unstructured external data with its own data. If it is not meticulous when implementing quality standards, it will drown in data it cannot process.

Automakers should start to develop big data skills by setting up special scrum teams with responsibility for specific use cases. The teams can develop a vision and business case – and, eventually,

oversee customer adoption and satisfaction. The scrum teams will also need to figure out IT requirements to make sure the new applications will work as intended.
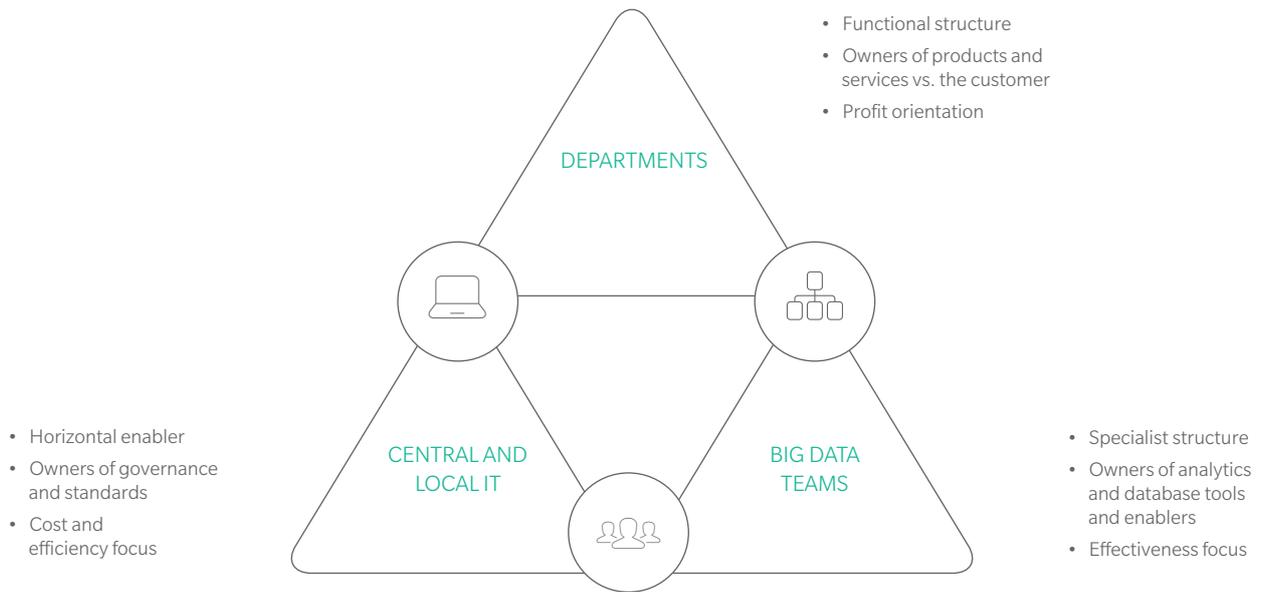
SMART PARTNERSHIPS

Digital innovations will dominate the automotive sector in the future, as the automotive ecosystem links to other areas of the connected life, ranging from alternative mobility services to in-car information and entertainment. This trend is already a living reality: Young people, especially, are using their smartphones as mobility planners, to reserve cars in sharing schemes, and to check the times of connecting trains. Even if fully autonomous vehicles do not become ubiquitous in our streets for many more years, driver support technology is already widespread in the form of parking assistance systems and speed-and-distance monitors that remind drivers to brake.

The convergence of the digital and automotive industries has brought new players into the auto industry, transforming it into a new, hyper-competitive playing field. Traditional vehicle manufacturers would have been stunned years ago to see companies like Apple, Google, and Microsoft competing for a share of the customer's mobility wallet. Now, these digital giants are investing heavily, especially in areas such as big data analytics and applications along the automotive value chain.

The new big data applications will be a valuable source of business for automakers, which will want to place their cars in managed fleets, whether these be for corporations or car-share schemes. These new business models and market players will gather valuable data on drivers' habits and tastes. As many of the players come from the digital world, they have experience in how to use the data effectively. They also have deep pockets and are willing to invest in new expertise. (See Exhibit 2.)

EXHIBIT 2: BIG DATA COOPERATION
Smart partnerships in the automotive industry

- Functional structure
- Owners of products and services vs. the customer
- Profit orientation

DEPARTMENTS

- Horizontal enabler
- Owners of governance and standards
- Cost and efficiency focus

CENTRAL AND LOCAL IT

BIG DATA TEAMS

- Specialist structure
- Owners of analytics and database tools and enablers
- Effectiveness focus

Source: Oliver Wyman

In some new fields, traditional automakers will not be able to compete effectively. So far, patent filings indicate that they are focusing on areas such as electric vehicles – the means to power the physical car – and leaving autonomous and mobility solutions to digital companies. Some automakers, rather than trying to develop digital applications at their own headquarters, have digital joint ventures in Silicon Valley and are investing in startups related to broader mobility or data analytics startups, as well as the processing of data.

Some of automakers' most crucial decisions in the future will be over how best to acquire essential new digital capabilities and technologies – the choice between in-house development, outside investments, and partnerships. As they try to forge win-win business relationships with new partners, they can leverage their knowledge of end-customers, which will help them ask the questions that will turn big data into smart data.

DATA PRIVACY

The customer will be an essential partner. In Europe, consumers' digital rights are being formalized in the General Data Protection Regulation (GDPR), which aims to give people control over their personal data and to unify regulation within the EU. Consumers will "own" their personal data: They will have the right to know the reasons for data collection, how it is used, and how long it is retained. They will also be able to request that companies erase and stop processing their data and to choose to carry their data to another service provider.

Surveys show that 57 percent of people have a high level of worry about online privacy, with just 13 percent reporting a low level or none. But many people appear to overcome such concerns if the result is greater convenience: Some 90 percent of Internet users currently use online banking, and 80 percent do some kind of online shopping. It is, therefore, a good bet that most people will be willing to share their personal data – so long as they believe they are getting something useful in return. Persuading them that this is the case means building trust into the customer's experience and relationship with the brand.

TIME TO GET STARTED

So, despite the importance of analytics to catch fish in the digital ocean, the first steps in many use cases will relate to getting the data lined up. An aftersales manager might want to know how to set prices optimally for spare parts and repair services; how to optimize uptime for customers by keeping parts available; or how to improve vehicles' reliability. But answering these questions poses numerous challenges – on the availability, structure, and complexity of data; on how far the data is (or is not) networked; and on the consequent ability to interpret data.

With the right approach, these challenges can now be surmounted. If an automaker starts work on potential use cases now, it should be possible to roll out new big data applications within six to 12 months. And, instead of drowning in data, the company will start making money out of it. ●

THE AUTOMOTIVE INDUSTRY'S
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