

4.5 Ownership of Machine Data



Debates on who has what rights to what IoT data escalate. Questions around title, control, and usage of data lead to many sectors taking different views.

Context

So far, most attention on data has focused on personal data. But looking forward, attention could shift to the increasingly vast quantities of information generated by machines – over 50bn connected devices are forecast by just 2020.

Machine to machine (M2M) data and the broader Internet of Things (IoT) is growing rapidly, having a huge impact on the way we live and how society operates. While many sensors broadcast data, some connected devices act like digital hoovers, sucking in all kinds of information which can be analysed by others and shared and shared again. Without even the click of a button, vital and

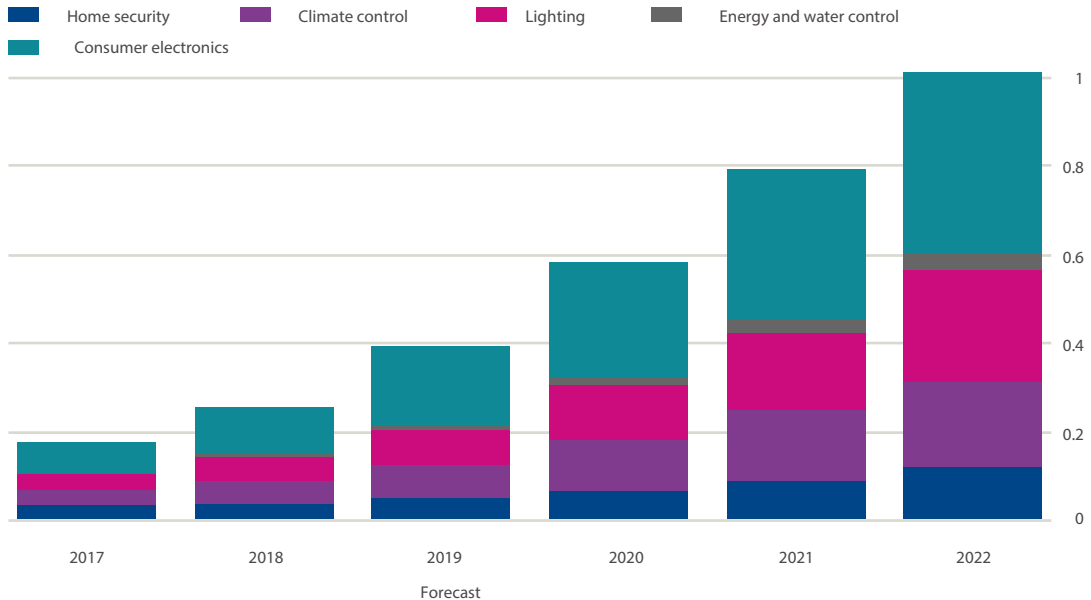
mundane data is spreading across supply chains, between cars, within buildings, and beyond. Indeed, such is the expected growth trajectory of this type of technology, that some think that by 2030, every device will automatically have a built-in sensor and internet connection.⁷⁵ Estimates of just how many connected devices will be in operation vary. By 2030, there will be 200bn of them, says Intel.⁷⁶ Cisco reckons around 500bn.⁷⁷ China will soon generate 20% of all the data from connected devices.⁷⁸ EMC forecasts that the IoT will soon need up to 40tn GB of data storage, while IDC sees 175 zettabytes of data by 2025.⁷⁹



As yet, there are no well-developed principles around the value of data extractions, but the likely financial impact of IoT is high. Bain predicts that by 2020, business-to-business IoT applications will generate \$300bn a year.⁸⁰ One estimate suggests that a 10% increase in machine-to-machine (M2M) connections will generate more than \$2tn in the US over the next decade.⁸¹ PwC predicts there will be \$6tn of investment in the US alone.⁸² Whatever the actual numbers, one thing is clear; as the Frankfurt workshop put it, whoever owns all the IoT data is about “to become a very big deal.”⁸³ It will also therefore be a source of intense controversy.

Ownership Uncertainty

The key question to ask is whether IoT data will have greater value if it is proprietary or open to all. Certainly, maximising the opportunities presented by the IoT is not as straightforward. A core issue is that in many sectors, there is as yet no agreed approach for machine data ownership, and many grey areas over control, beneficial use, and access. While there has been steady progress on the complex debate on personal data, for machine data there is little clear headway on whether, for example, ownership aligns with a device manufacturer or the device user.



SOURCE: IHS Markit

Rise of Machine Data: IOT devices growth (2017 to 2022)

In the increasingly automated agricultural sector of the 21st century, for example, the farmer may or may not own the data produced by the machinery in the field; the farm equipment manufacturer often has the right to take that data and use it across a wider system.⁸⁴ Across the food supply chain, just as wheat is harvested, processed into flour and used to bake bread that is sold on to an end user, so too is data. As was suggested in a parallel Future Agenda discussion on future land use, *“for a supply-tracked beef burger, the debate on who owns the provenance data about the cow it came from – the farmer, the meat processors, or McDonalds – is just one simple example about which there are alternative views.”* The McDonalds supply chain is famously efficient and collaborative, but with millions of farms involved, who actually owns what data is not clear.⁸⁵

In the automotive arena, many are excited about the potential and roll-out of increasingly connected autonomous vehicles – all generating and sharing huge volumes of data. Toyota estimates that the data volume between vehicles and the cloud will reach 10 exabytes (10¹⁸) per month around 2025.⁸⁶ Many owners or leasers of a car may believe that the data it produces, and so at least a good proportion of the value, does, or should, belong to them. But others across the sector have different views, and answers might vary according to the nature of the data.⁸⁷ For example, location, speed, destination, outside temperature, and emissions data, may well be made open for all to use, while more specific information on, for example, road condition, fuel levels, driver tiredness, brake and tyre condition, as well as even accident data, may be held by several interested parties, including the car manufacturers, insurance companies, repair services, government agencies, and fuel brands. *“Very little automotive data, other than detailed engine performance information, may be proprietary. As such, there is likely to be little value in the data itself, but rather the impact shifts to the outcomes of its use.”*⁸⁴

Overall, given all the activity, investment, and strategy development by a host of major governments and companies, from our discussions, there is no universal answer to the question of machine data ownership on the horizon. Many different parties with varied vested interests are keen to at least agree some ground rules, if not come to a global protocol, but it may be years before significant progress is made. Gaining clarity on who owns machine data and who is legally entitled to use it for analysis and additional value creation, is a key priority for many.

“The provision of leading-edge analytics will help maximise the potential value extracted from data, and provide a more level playfield for SMEs.”

Jakarta workshop

What We Heard

As mentioned previously, many believe that data should not be subject to the laws around property. However, in the West, the owner of the data is often considered to be the organisation that holds legal title to the device that recorded or generated the data – be that a streetlight, a tractor, a doorbell, or a high-speed train. As long as there is no other agreement in place, then perhaps the only entity that has the right to use or dispose of that data is the one that actually produced it in the first place. So, data title is like a deed to a property. However, as was highlighted in our parallel conversations on the value of automotive data, *“the organisation who has possession of a machine is not necessarily the owner of it; things can get rather uncertain when for example equipment is being leased from one organisation to another.”*⁸⁹ As leasing is now the preferred approach for many sectors, from agriculture and transport to healthcare and building management, this matters.

Some experts feel that whoever generates the data owns it, and it can then be sold on. But others suggest that in the increasingly complex ecosystems and decentralised supply chains and webs now operating across many sectors, the source of any data may be from multiple parties, plus a host of those involved in the product delivery think that they own the data. Not surprisingly, therefore, several in Tokyo suggested that *“we need a fundamental rethink about who owns the data.”* In fact, *“there are no general laws about information property, other than some regulatory rules in vertical industries.”*

Going forward, workshop participants feel that the most significant change will come in two main areas – the role of AI and access to analytics.

- In Frankfurt, some felt that *“data will increasingly be created and used by machines, and never be touched by humans.”* As such, *“machines will make automated decisions, as M2M and AI authority takes over,”* and so control moves to the algorithms, or whoever owns them. A linked proposal in San Francisco was that *“we will see algorithmic regulation to address machine data that is beyond human governance.”* So, as machines create and use more data, maybe AI will be needed to police this, and included here will be the questions of ownership and value. An additional view from Japan was that *“in the future, metadata will be built by AI”* and *“the ownership of metadata will be challenged.”*

“We will see algorithmic regulation to address machine data that is beyond human governance.”

San Francisco workshop

- In Jakarta, there was a strong view that new data analytics capabilities from the Internet of Things should be made more accessible to wider industry rather than just Big Tech. *“The provision of leading-edge analytics will help maximise the potential value extracted from data, and provide a more level playfield for SMEs.”* Indeed, several felt that, if not appropriately regulated, this imbalance of capability between the few leaders and the mass of industry could lead to significant inequality at both a sector and a national level. A related view in Germany is that over the next decade, *“mid-sized businesses will struggle, as large corporations benefit because they have the resources and the data.”*

More generally, the consensus in a Stockholm discussion was that we need to move towards a more *“heterogeneous understanding of IoT,”* and potentially require some sort of *“quality of assurance for IoT data.”*

Implications for Data Value

In a field where trillions are normal day-to-day statistics, it is increasingly apparent that the ownership of machine data is already a big issue. Given the uncertainty, and who has rights in what circumstances, some see it as surprising that so many major companies and VC funds are making huge investments in smart cities, connected cars, and digital trade, and most view the potential value of the machine data as a central part of the business case. However, despite the lack of clarity, interest from cities, governments, and wider society will undoubtedly grow. The provenance, ownership of, and access to machine data is a mounting debate across many industries. The value of that data and to who is set to become pivotal.



“Data will increasingly be created and used by machines, and never be touched by humans.”

Frankfurt workshop

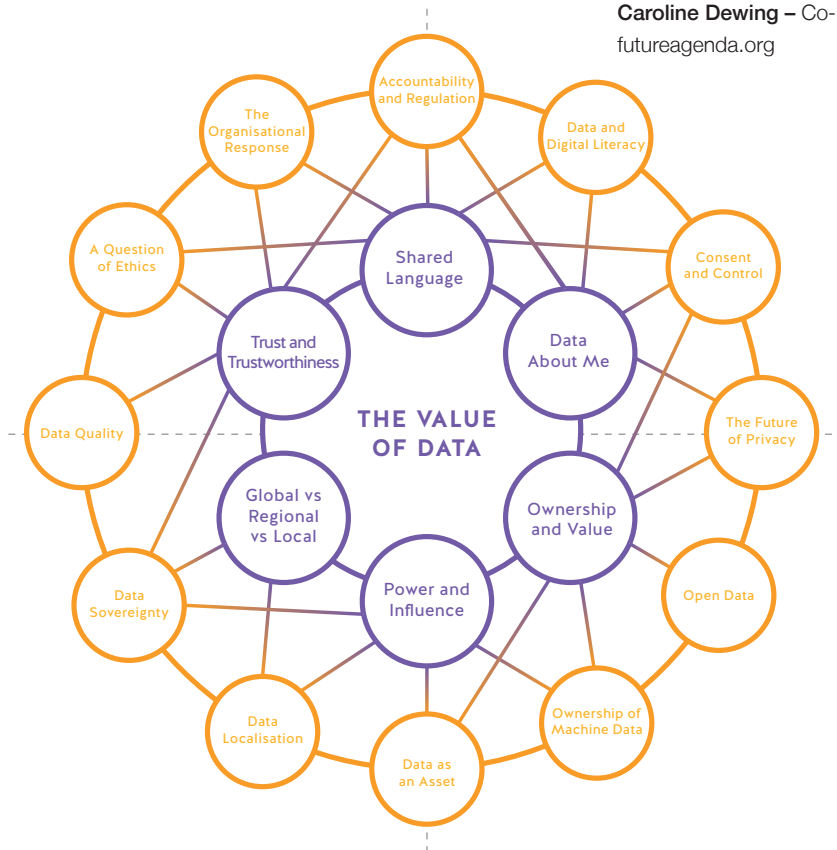
Context

This is one of 18 key insights to emerge from a major global open foresight project exploring the future value of data.

Throughout 2018, Future Agenda canvassed the views of a wide range of 900 experts with different backgrounds and perspectives from around the world, to provide their insights on the future value of data. Supported by Facebook and many other organisations, we held 30 workshops across 24 countries in Africa, Asia, the Americas, and Europe. In them, we reviewed the data landscape across the globe, as it is now, and how experts think it will evolve over the next five to ten years.

The aim of the project was to gain a better understanding of how perspectives and priorities differ across the world, and to use the diverse voices and viewpoints to help governments, organisations, and individuals to better understand what they need to do to realise data's full potential.

From the multiple discussions 6 over-arching themes were identified alongside 12 additional, related future shifts as summarised in the diagram below.



Details of each of these, a full report and additional supporting information can all be found on the dedicated mini-site: www.deliveringvaluethroughdata.org

About Future Agenda

Future Agenda is an open source think tank and advisory firm. It runs a global open foresight programme, helping organisations to identify emerging opportunities, and make more informed decisions. Future Agenda also supports leading organisations, large and small, on strategy, growth and innovation.

Founded in 2010, Future Agenda has pioneered an open foresight approach bringing together senior leaders across business, academia, NFP and government to challenge assumptions about the next ten years, build an informed view and establish robust growth strategies focused on major emerging opportunities. We connect the informed and influential to help drive lasting impact.

For more information please see: www.futureagenda.org

For more details of this project contact:

Dr Tim Jones – Programme Director,
tim.jones@futureagenda.org

Caroline Dewing – Co-Founder, caroline.dewing@futureagenda.org

Text © Future Agenda
Images © istockimages.com
First published November 2019 by:
Future Agenda Limited
84 Brook Street
London
W1K 5EH