



## The future of the internet

The internet has infiltrated almost every corner of society, transforming our lives in the process. Over the coming decades, networked innovations will extend this change to the physical world. But as we become ever-more reliant on online tools and services, who should protect and regulate the internet itself? Our Global Agenda Council experts explore the debates and opportunities ahead.



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Over the past two decades, the exponential growth of the internet has led it to touch upon every aspect of modern life. From mobile entertainment to healthcare to the heart of enterprise, the internet has become, in the words of Bill Gates, “the town square for the global village of tomorrow”.

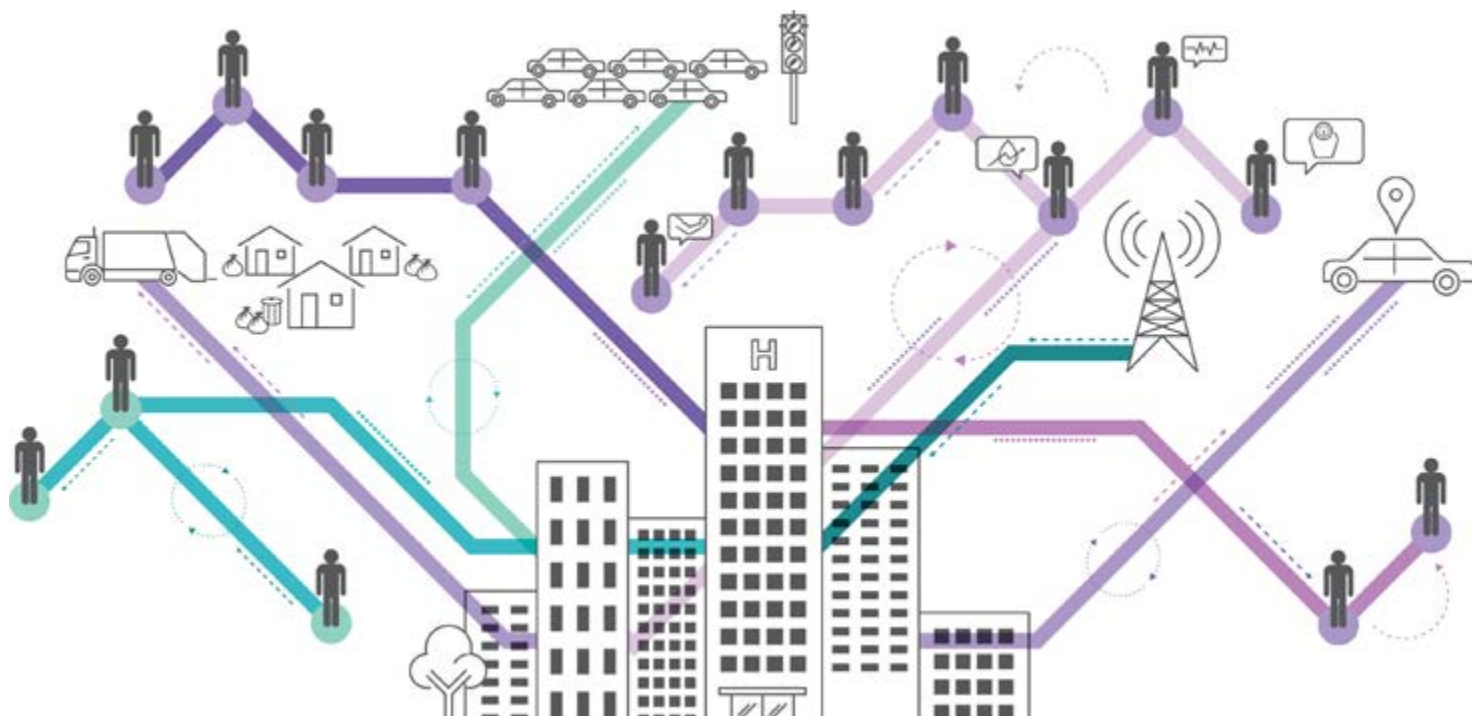
Now, with the advent of the Internet of Things, we stand on the threshold of a new era – one in which online functionality will spread to the physical world, to the objects and environments that surround us. As this happens, however, the complexities associated with online structures are transferred to the offline world, including the question of governance. As web-enabled devices take an ever-more prominent role in our societies, who should govern and protect the infrastructure upon which they rely? Will this issue of governance hinder the development and adoption of internet technologies? And what opportunities and problems will be presented by this new chapter

of our technological history, both for governments and individuals?

### The power of networks

Networked technology is spreading rapidly from traditional devices to everyday items, and even to the spaces in which we live. Before long, online functionality will be ubiquitous in the most commonplace objects, allowing them to identify, communicate and cooperate with one another. This coming phenomenon is known as the ‘Internet of Things’.

Research firm Gartner predicts there will be 26 billion devices on the Internet of Things by the year 2020. Anil Menon, President of Smart+Connected Communities at CISCO, believes that the rise of omnipresent connectivity will present opportunities and challenges in equal measure, fuelled by an explosion in data feedback from our networked environment.



“Connecting one object to every other object will not necessarily transform the way we live or do things,” he says. “It is by connecting things to processes, and then using the resulting data to change the way we behave – that is where you will see a dramatic shift. The Internet of Things will be the foundation, but it will be the business models on top of it that will change our lives.”

Menon believes that cities are the entities best placed to benefit from this data-centred evolution. Yet the current lack of standards in network interoperability presents a potential hurdle to those who would harness this power. Global standards in medicine, for example, allow for communication between doctors who cannot speak each other’s language. Now we need to establish a similar harmony for data.

“In 1913, the city of London had 65 utility companies with 49 standards,” says Menon. “One hundred years later, in 2014, the situation echoes that of digital infrastructure, where you have multiple networks, each with different standards. What we need is a single layer with very strong privacy and security protocols, allowing us to use data feeds at the appropriate levels to manage things like traffic, water flow, and parking.”

The management of these services won’t be limited to local authorities, either. Menon cites the example of TaKaDu, an Israel-based company that is offering cloud-based water management to cities in Australia and Singapore, monitored remotely from the other side of the world. In the near future, authorities will be able to outsource a plethora of operations, from traffic control to waste-disposal, to the cheapest, most efficient operator – wherever they may be. At the same time, immersive technologies will reduce the need for individuals to relocate to cities in order to access top-tier healthcare services.

“Our research shows that for 80% of a typical doctor’s consultation, the doctor doesn’t need to touch you themselves,” says Menon. “Somebody needs to be physically present, but that person doesn’t necessarily need to be the doctor. So once we have wearable health monitors and interactive video, why should you drive all the way into town for a consultation?”

The evolution of medical services will be particularly effective in developing countries. “In a country like Tanzania, which has one of the highest rates of infant mortality from heart conditions, most hospitals will not have a dedicated

pediatric radiologist or surgeon. But with the help of immersive digital technologies, we’ll be able to offer those institutions interactive access to experts. And those same experts will also be able to help a child in India, or rural Mexico.”

Thanks to the increasing omnipresence of networked technology, we are set to experience significant changes to the long-established, time and space-bound structures of society. But as we grow ever-more reliant upon online functions to support and enhance our lives, a key question arises: who should oversee our online world?

## The governance of the internet

Many people regard the internet as a global entity, something that exists outside of the boundaries of national ownership. Yet the fact remains that much of the system’s core infrastructure remains in the hands that pioneered it, and specifically in Western institutions. The protocol for the assignment of IP addresses and online namespaces is handled by ICANN, based in California; authority over the internet’s Domain Name System ultimately lies with the



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US National Telecommunications and Information Administration. The Internet Society, a non-profit organization that aims to shape the development of the net for the benefit of users worldwide, now has chapters in 90 different countries – but its headquarters are located in Reston, Virginia, in the US.

In the wake of Edward Snowden's electronic surveillance revelations, the movement to oppose this US dominance is gaining momentum. Professor Xiaodong Lee, Chief Executive Officer of the China Internet Information Network Center (CNNIC) thinks the current governance model has to change, yet he suggests it is unhelpful to blame Western nations for their established levels of influence.

"It's not the fault of Western countries," he says. "The West is home to a lot of developed nations with strong technology and good knowledge about the internet – that's why they play a very important role in its governance. The reality is that there's a gap between western and eastern countries. If you look at Africa, there are still many countries with a limited number of internet users – but I believe in the next 10 years, the entire population of the continent will move online."

Crucial bodies like ICANN currently lack members from developing nations, depriving these countries of a voice in regulatory debates. Professor Lee regards this as a key flaw in the current governance arrangement. As their access to computer resources improves, developing countries will find it easier to send representatives to organizations such as ICANN – yet true progress may rely upon the creation of new institutions altogether.

"In the future, no lone institution or country can rule the internet, not even the United States," says Professor Lee. "I would choose a new organization to govern the internet, a new platform to discuss the culture issues involved. The internet is everything! It's not only a commercial or educational or technological concern. It has morphed into the physical world, so it cannot stand only one organization to govern it."

Professor Helen Margetts, Director of the Oxford Internet Institute, agrees that the transition to a more global

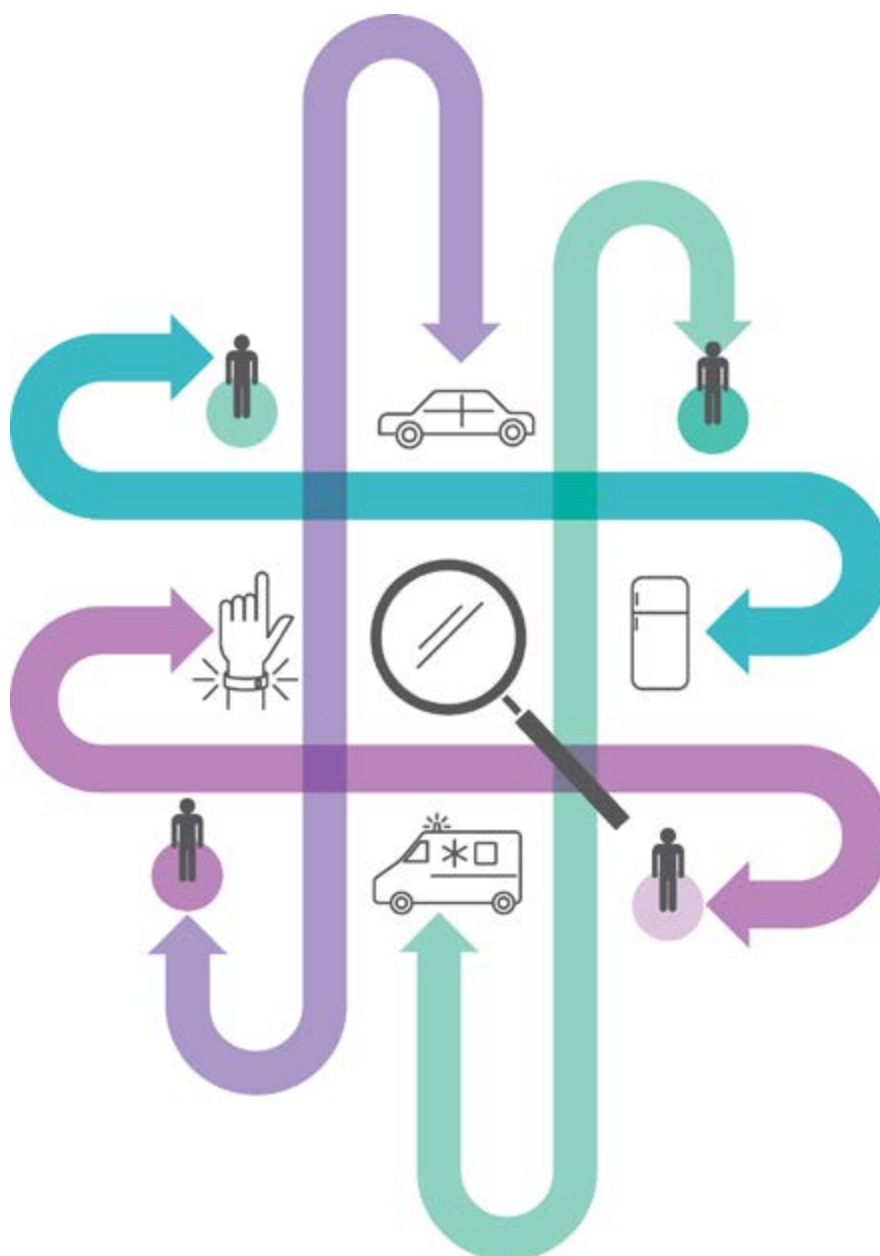
governance structure is desirable. However, she feels that the question of governance is less important than the fact that the landscape of the internet is evolving at a speed that authorities struggle to match.

"I don't think talking about a new model of governance for the whole internet is really the way to go. The internet is often depicted as some kind of lawless Wild West, when in fact its architecture and operation is governed by clear standards and protocols set by international bodies, while our use of the internet is largely covered by existing laws and regulations on issues such as fraud, copyright and libel. There are aspects of these laws and regulations that are basically unsuited to deal with changing technologies and the fact that people spend increasing amounts of their time in digital contexts – and that is what we need to address. But that is not really a question of internet governance.

I am in favour of a multistakeholder approach, where there is no single point of failure, or domination by a single group or set of interests. Existing governance structures need to adapt and change – but I am not supportive of a government-focused type governance model. There are reasons to be worried about those – I'm not aware of an Eastern governance model that doesn't involve censorship. Rather, we need a clearer understanding of the limits of government and corporate intervention online."

The recent debates over the surveillance activities of the US National Security Agency (NSA) and the UK Government Communications Headquarters (GCHQ) have cast a spotlight upon governmental use of the internet, particularly with regards to data-tracking. But for Professor Margetts, the real dangers lie with the rapid centralization of the internet, which has led to the emergence of monolithic platforms such as those owned by the world's most popular search engines and social networks. While she feels that these companies have had a broadly positive impact on the experience of using the internet, their data-gathering capabilities and increasing omnipresence makes them hard to control.

"As unhappy as I am that the NSA and GCHQ have gathered large quantities



of my personal data, I am equally concerned about the amount of information the major digital services companies have about me," she says. "How long are they storing this data for, and for what purpose? Once you are using the same platform for your search engine, email and cloud services – and then add a driverless car into that mix – you establish a toxic situation that is very difficult to regulate."

Legislation arguably represents the key battleground for determining the future of the internet. Professor Margetts believes that the real question is whether existing laws and regulations on issues such as fraud, copyright, libel, data protection and freedom of expression can be effectively enforced online. In some areas

new bilateral agreements are emerging which may amount to international agreement, such as consensus around measures tackling child abuse images online. In other areas, we see a few reactive prosecutions rather than widespread adherence.

For all the drastic change that the growth of the internet has already brought to our lives, the years ahead will require further adaptation on the part of governments and individuals alike – particularly as the Internet of Things becomes a widespread reality. But for Professor Lee, this change is not something for us to fear.

"If you go back 100 years, there were very few cars – most people would feel

very nervous if they even saw one," he says. "Today there are five or six million cars in most cities. People aren't worried because they know how to drive, how to avoid being hurt by them."

He continues: "Now we're living in the internet age. There are so many sensors, so many video cameras everywhere and facilities to monitor everything – so of course there are a lot of security issues, and people want to protect themselves. We already know how to do that in the physical world, but we need to build new models and cultures for the internet era, rules that will let us find a balance between a convenient life and a secure life. And that may take a couple of years." ■