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INNOVATIONS IN DIGITAL TRADE: UNLOCK THE FUTURE TODAY

A Huawei Paper. January 2021.



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Foreword

Huawei is one of many enterprises that have grown and benefited from globalization, and contributed to it as well. Booming consumer demand for ICT technology, supported by free trade, and fair competition, has driven the development of global technology value chains, generating prosperity and human progress. It has enabled countless small and medium-sized enterprises to connect to global markets, increased the availability of higher-quality products and services at more affordable prices, and empowered individuals and society to build a better world.

Although globalisation has undoubtedly increased overall prosperity, we have not found solutions to the challenge of inequality in the distribution of its benefits and the increasing gap between rich and poor. It is evident these challenges cannot be resolved unilaterally by restrictions, protectionism, targeted attacks on individual companies, or by forced decoupling.

Historically, wealth disparities have always existed and social problems have been caused by many factors. During the next phase of globalization, we must strive to adjust the rules of value distribution. In the digital space, companies need to contribute social value by helping to bridge the digital divide, create equal opportunities, avoid gender discrimination, improve digital skills, and help vulnerable groups participate in the digital era. The power of intelligent digital connectivity to address our common global challenges is highlighted in this new paper on innovations in Digital Trade that will shape the future.

Today's world is full of change and uncertainty, and no country or business can stand alone in the storms of time. We need to sit together and work to find ways and means to get through the multiple common crises we all face, and move together confidently towards the future. The purpose of this paper is to focus our joint efforts on practical steps to unlock the potential of Digital Trade.

Shenzhen, January 1st 2021



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Executive Summary

The COVID-19 pandemic has made one thing clear in stark terms: governments which put digitalisation at the heart of their economic and trade policies will have a competitive advantage over those which do not.

Unlocking the potential of digital trade is key to future global health, prosperity and stability. The cluttered path needs clearing. One way to do this is by focusing the creative energy of the global trade community on concrete and concerted actions. This second Huawei White Paper on Digital Trade is a new contribution towards accelerating the digitalisation of trade through new and updated rules for the digital era.

Opportunities

Digital trade provides many golden opportunities to build global collaboration. Beyond the pandemic, trade in technology goods and services that support common global objectives, such as tackling the climate crisis and inequality, require global collaboration.

National policymakers would do well to evaluate the public policy benefits of digital trade based on a clear view of how it relates to the overall economy:

- » Digitalisation is integral to more than 15 percent of global GDP and rising dramatically year-on-year. Within three years it could approach 50 per cent.
- » Studies consistently show that the great majority of digitisation's benefits flow to traditional businesses. This reinforces the importance of embracing digitisation to improve competitiveness and build recovery and resilience. This is even more important in the context of post-COVID recovery.
- » Digitisation is positively correlated with labour productivity and income growth.

These simple realities have far-reaching consequences for policymakers looking to energise economic recovery, reduce poverty and inequality, and ensure their citizens, especially the next generation, can enjoy peace and prosperity and rising living standards. This is true for both developed and developing countries.

Decoupling is unaffordable.

In the wake of COVID-19's economic devastation,

the world simply cannot afford forced technology decoupling. The exorbitant costs such a decoupling would entail are highlighted in a brand new landmark report by the Economist Intelligence Unit on the "Costs of Deglobalising World Trade"

The cumulative loss to global GDP over a decade of aggressive decoupling would amount to USD 52.8 Trillion. That is equivalent to shutting down an economy the size of Japan every year for 10 years and would reverberate across the entire world. In stark contrast to this path, a policy of enabling technology for all can unlock the potential of digital trade to create and share prosperity.

Cybersecurity requires law & order.

As digital trade involves importing and exporting packets of data in addition to shipping containers of goods, transparent rules and fair competition are essential to prevent cyber-trade wars. There are currently no global rules on how to deal with cybersecurity, though initiatives such as the "Paris Call" are underway, supported by Huawei and the technology sector. Rules on cross-border data flows are also patchy, leaving this space like the Wild West.

During these difficult times, a rush to trade protectionism has so far been avoided by governments — with the notable exception of the US-China trade war. However, trade frictions are multiplying. High profile examples include the threats exchanged between the US and EU over car tariffs and taxes on technology companies. The very latest example concerns US sanctions to keep EU champions out of the Chinese chip market while giving exemptions to US companies. India's policy of "self-reliance" has been used to justify a ban on 59 Chinese mobile apps and more measures are in the pipeline (and not only against China). EU manufacturers are reported to be accelerating plans to manufacture in China without US semiconductors, anticipating increasing restrictions of specific chips to China.

Responsibility to avoid a technology schism.

How to avoid a technology schism is the No1 question for the technology sector and governments that must be settled early in 2021. We suggest the answer lies in promoting access to technology for all.



Closing the digital divide affecting half of humanity will accelerate digital trade and support better distribution of the benefits of globalisation. Without action, those without connectivity, especially in developing countries, will be increasingly left behind. Collectively, we know what policy choices can transform this situation and they are explored in this paper.

Our generations bears a responsibility to the next to meet this challenge now, when significant results are within reach, not years from now when divides are greater. ASEAN leaders representing a third of humanity and a third of global GDP have taken a step to greater interdependence and connected supply chains by signing RCEP. Most of world wants to follow this path to shared prosperity.

Huawei believes trade policy can be a powerful enabler of economic opportunity and development. Digital technologies have proven very effective during the pandemic. Recovery requires trade policymakers deliver more, and faster, than before. Leaders should recommit via actions to rules-based global trade governance. One action to accelerate now is the WTO electronic commerce negotiations. Delivering faster will require trade negotiators to innovate in their negotiating dynamic and bring together technology leaders to find solutions. We offer a few ideas on how to do this..

The New Imperatives we face

This White Paper explores how digital is changing

trade, how initiatives in international organisations can be energised, and how to advance on the new imperatives facing us all.

- » Part I considers supply-chain shocks, trade tensions and uncertainty, and how new technologies can have a positive impact on the growth of international trade. New and better regulation can unlock economic growth and sound trade policies can support innovation. Above all, there is a need for multilateral cooperation and a level playing field regardless of the origin of technology
- » Part II considers the global collaboration already in progress in international organisations such as the OECD, UN ,B20 and WTO. This chapter reminds us that international standards for Cyber Security are a shared responsibility, and trade sanctions must be proportionate and comply with WTO Rules. Government should restrict trade as little as possible. National security is vital but cannot be used to justify protectionism..
- » Part III considers the new imperatives of the decade starting with new data that shows decoupling is an unaffordable option. It highlights the importance of restoring multilateral cooperation at the WTO, and of rethinking the roles of states and markets in digital trade. There is a need to re-commit to a more inclusive model of globalisation and a new balance to share equitably the value of data. With the right approach, multipolarity can be the basis of collaboration rather than conflict.

Urgency for concerted action

As a leading global company Huawei takes seriously its role in nurturing an optimal global business environment for digital technologies, and we will continue to work constructively with industry partners, governments and all stakeholders to achieve this. Given the urgency of post-COVID-19 economic recovery, the climate crisis, and economic inequality, 2021 is the year to unlock the potential of digital trade. Global collaboration and technology for all will enable us to step forward with confidence into a healthy, prosperous, connected and intelligent world..

Shenzhen, January 1st, 2021



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Part I: Digital at the Heart of Global Trade

These are turbulent times for international trade and investment liberalization. The fundamental principles that have secured generations of post-War economic prosperity for a broad swathe of humanity are being called into question. Fortunately, most world leaders today recognize the need to come together in cooperation to face global issues including COVID-19, the climate crisis, and economic recovery. Most also recognize the need to reaffirm their commitment to a shared set of values on trade that include open markets, non-discrimination, and a rejection of protectionism, as well as the essential centrality of a rules-based multilateral trading system.

We published the first version of our Digital Trade White Paper in 2017, which offered a wide-ranging survey of the international trade landscape at the time, paying particular attention to ongoing efforts to create a new set of rules that facilitate the development of a healthy digital economy. Since then, some of those efforts have proven successful — a set of new disciplines in international trade agreements

such as the Comprehensive Pact for a Trans-Pacific Partnership Agreement (CPTPP) go some way toward creating a degree of certainty for companies offering goods, services, solutions and technologies that fall within the broad contours of what today constitutes the digital economy. Similar rules are currently being negotiated at the WTO in the negotiations on electronic commerce involving some 85+ nations. A similar but even more ambitious set of rules have been successfully negotiated in the context of the USMCA.

In 2017 we drew up a set of nine key findings on the needs of the digital economy in the context of new trade rules. Those findings have stood the test of time. In the course of writing this new paper on Digital Trade, we have added further principles that we believe are fundamental in the current climate and that we believe policymakers and our industry partners should embrace. We offer these to express and share our perspective on current events and what we believe needs to happen for all of us to emerge from the current trials stronger, more secure, and

more committed to collaboration rather than conflict.

In the era of digital trade, data will increasingly drive international flows of goods, services, technology, capital, and talent. Digital platforms will increasingly become the standard basis for ecosystems that collect resources, promote collaboration, improve efficiency, and build global value chains extending from the physical world to the digital world.¹

Five digital services are likely to have a significant impact on the development of digital trade. **Cloud storage and computing services** will support service delivery in the field and accelerate cloud migration. This will drive the formation of a "cloud economy" ecosystem, and the rise of new business models such as crowdsourcing, crowd finance, cloud outsourcing, and platform subcontracting. **Digital platforms** will be an important support for the efficient and orderly operation of the digital economy and of digital trade. Such platforms provide a mechanism for online interaction amongst interested parties regardless of their physical location, and support the cross-border connection of supply and demand of data, goods, and services, as well as international collaboration in R&D, design, and manufacturing. **AI services** will accelerate the development of digital services and improve their intelligence, automation and sophistication. **5G network services** will create opportunities for new applications and business models. It will energise the development of smart specialisation, and more inclusive participation in the global supply chains of the new digital service industry. Finally optimized **digital trust services** such as verification, identity and blockchain services will build a secure and trusted international business environment, to facilitate trade in data and digital products and services².

Five areas of digital trade are already showing remarkable results. In the field of **manufacturing**, a new model of "service-oriented manufacturing" is emerging, which deepens the mutual integration of manufacturing and services. Services account for an increasing proportion of inputs and outputs in manufacturing, which in turn increases the demand for the import and export of these digital services. The field of **business** has seen a proliferation of new digital

services within the global cross-border e-commerce ecosystem, including digital platform services, market information services, payment settlement services, and logistics information services. In the field of **finance**, "financial technologies (so-called "fintech") are integrating digital services, the internet, big data, blockchain, and cloud computing in new ways to serve finance needs. As a result, cross-border financial services critical to international trade (such as international settlements and payment) are increasingly digitalised. In the field of **lifestyle and entertainment**, online video and gaming industries are taking shape, and global digital rights transactions are growing steadily. In the field of **traditional services** such as education and healthcare, new online versions are developing rapidly, providing consumers with more service options both at home, domestically and internationally. The digitalisation of these traditional services has been catalysed by the COVID-19 pandemic. In addition these services are pioneering new channels of cross-border service delivery within and between communities based on language rather than nationality or proximity.

The importance of international settlements and payments to global trade means that the financial sector has strong potential for further development and further integration with digital technologies and services. It is already much more advanced than in traditional service industries. In international settlement, SWIFT was one of the earliest and most influential digital financial service providers. By October 2019, SWIFT services had been deployed in over 200 countries and regions. The packet transmission platforms, products, and services are connected to more than 11,000 organisations worldwide. The number of financial telecommunications processed per day regularly reaches around 33.6 million, and has experienced a peak of 36.73 million. SWIFT's business model and revenue sources are similar to those of many Internet platform companies, in terms of membership & annual fees, transmission service fees and other services such as software, business intelligence, and legal compliance.

In international payments, many countries have advanced preparations for the issue of sovereign digital currencies. In January 2020, the Bank of Japan

¹ China Academy of Information and Communications Technology (2 December 2020), White Paper on Digital Trade Development

² For an interesting and well written overview of digital service evolution as viewed from China, see: China Academy of Information and Communications Technology (2 December 2020), White Paper on Digital Trade Development.

announced that it would set up a special working group with the six major central banks, including those of the UK, Canada, Switzerland, Sweden, and the European Union, as well as the Bank for International Settlements, to jointly study the issue of central bank-issued digital currencies. In October 2020, it announced that it would strive to launch the central bank's digital currency experiment in 2021. In August 2020, China's Ministry of Commerce stated in its Overall Pilot Plan for Deepening the Innovation and Development of Service Trade that pilots of digital RMB would be carried out in three areas of high economic activity, Beijing-Tianjin, the Yangtze Delta, and the Guangdong-Hong Kong-Macao Greater Bay Area. In October 2020, the ECB released a comprehensive report on the possible issuance of digital currencies, and there has been progress on the digital euro project. This will be an exciting area of development to watch in 2021.

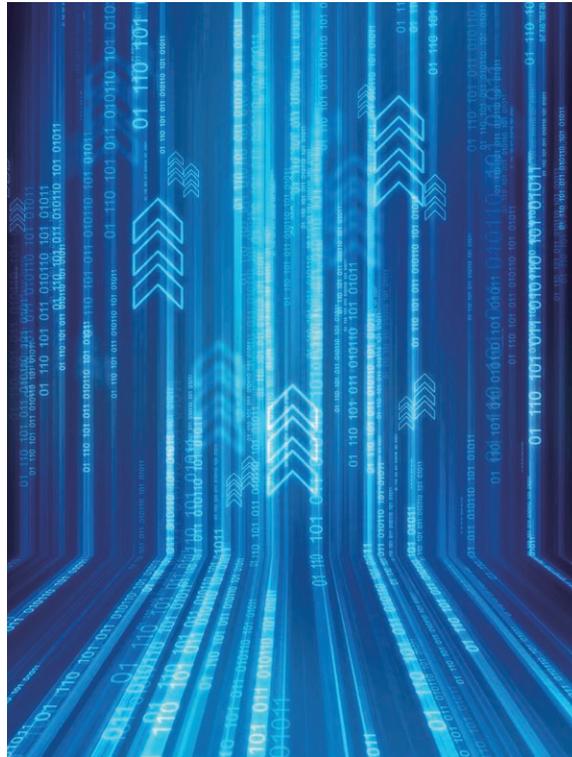
A number of our original findings are worth recapping here for what they reveal about our early thinking on topics now being hotly discussed:

Finding No. 5: Huawei's interests are the interests of the global ICT industry.

Already back in 2017, Huawei's role as an industry leader ensured that the interests of the global ICT industry were largely the same as its own. The needs of companies and businesses operating globally are remarkably similar. We all need open markets and a level playing field to compete on. In recent years, our leadership position has strengthened across different product lines, such as consumer devices and 5G, as well as in new areas like Artificial Intelligence. With this trend, our interests have become even more closely aligned with those of our industry partners to the point where our interests and the interests of the global ICT industry are one and the same. Nowhere has this been more on display than in the 2019 actions by the US Commerce Department to cut off Huawei from its network of US suppliers, something that has caused massive disruption to global supply chains and affected many different players from different markets and economic sectors.

Finding No. 6: We all win in a world where the internet is global, open and accessible

This finding is even more relevant today, given that the trend towards internet fragmentation has unfortunately only accelerated since then. Although



we have seen some standard-setting in agreements like the CPTPP and USMCA, it is likewise true that we are increasingly heading toward a world of several distinct and separate internets, instead of the universal and freely accessible global commons that the internet represented in its early years — unless we choose to change course. This troubling trend may be the result of governments asserting their sovereignty in the online space in the same way as they do in the offline world, and so, to some extent, may be inevitable. However, even if it is inevitable, it is vital to ensure that is done with a view to maintaining interoperability and minimising restrictions on trade.

Finding No. 7: Governments remain the arbiters of the public policy exception

Governments of all ideological bents are starting to reassert their internet sovereignty in ways that were technologically unfeasible 10 or 20 years ago. For various reasons, governments are intervening in digital markets more invasively than at any time since the birth of the internet economy. We need a set of rules that will ensure that public policy interventions that have an impact on global commerce are conceived and implemented in a way that minimises restrictions on trade and adheres to the time-tested principles

of non-discrimination, transparency, and fairness, as well as avoiding disguised protectionism. In the vast majority of cases, governments have more than enough regulatory autonomy to fulfil their public policy mandates without violating their international trade obligations or the fundamental principles they rest on.

Finding No. 8: National security is vital but cannot justify every policy intervention

In the years since we published the first edition of our White Paper we have seen a significant increase in the use of national security to justify a wide range of measures that restrict trade. This is a very worrying trend and one that needs to be addressed urgently, preferably at the intergovernmental level. The WTO has also for the first time adjudicated a panel on this very issue. This has provided some degree of certainty that it is possible, at least to some extent, for disputes at the WTO to impact state behaviour in the use of national security exceptions in trade agreements. Nevertheless, if governments were to agree common standards on cybersecurity — and transparently and robustly implement the norms on state behaviour in cyberspace they agreed to in 2013 and 2015 by consensus in the UN General Assembly³ — this would be a huge step forward and create more certainty and predictability where currently there is very little. Given that cybersecurity spending is spiralling globally, estimated to be more than US\$600 billion in 2020 alone, the costs to the real economy mean that an inability to agree upon international standards now would one day be remembered as a global strategic failure of the first order.

Finding No. 9: Regardless of who leads, these rules ultimately belong in the WTO

Today we are in the very fortunate position that active negotiations on electronic commerce are ongoing at the WTO, even though these are still at a very early stage. This is fortunate because any textual outcomes

from these talks will enjoy much greater participation and (just as importantly) legitimacy than any of the outcomes we have seen so far in the very limited scope of regional or bilateral FTAs. Today, rule-making is predominantly taking place in the context of bilateral and regional agreements. Notwithstanding the fact that the proliferation of such agreements is a very positive development, it is also likely to lead to greater fragmentation, with different outcomes being achieved between different trading partners, depending on the relevant balance of offensive and defensive interests. Agreeing on rules at the WTO, even if it were within the narrower constraints of a plurilateral agreement, would create a more widely accepted benchmark against which to measure other efforts.

Only three years later we see a different landscape in the politics of trade - and in the trading behaviour of many nations - but the digital economy has only become more important.

Why is the digital economy policy a first order priority for all economies?

We believe that national policymakers have to evaluate the public policy imperative of facilitating digital trade based on a clear view of how it relates to the overall economy:

- » Digitalisation is integral to more than 15 percent of global GDP, and this figure is rising dramatically year-on-year⁴. Within three years it is estimated it could exceed 50 per cent.⁵ Even if these projections are wrong by 50%, a full quarter of the world economy will be inaccessible to those firms lacking access to affordable connectivity and the skills to use it, and that proportion will only get larger with each passing year;
- » Just over half of the world's people are online⁶, and a key reason why is affordability: on average in developing countries a 1GB mobile broadband

³ For an overview of the norms and what was agreed upon, see: NATO Cooperative Cyber Defence Centre of Excellence (2015), "2015 UN GGE Report: Major Players Recommending Norms of Behaviour, Highlighting Aspects of International Law," at <https://ccdcoe.org/incyber-articles/2015-un-gge-report-major-players-recommending-norms-of-behaviour-highlighting-aspects-of-international-law/>.

⁴ UNCTAD (2019), Digital Economy Report 2019, at https://unctad.org/en/PublicationsLibrary/der2019_en.pdf.

⁵ As examples, the World Economic Forum projects 60 per cent by 2022 and IDC over 60 per cent by 2023. See: WEF (2019), Our Shared Digital Future Responsible Digital Transformation, Board Briefing, at http://www3.weforum.org/docs/WEF_Responsible_Digital_Transformation.pdf and IDC (2018), IDC FutureScape: Multiplied Innovation Takes Off, Powered by AI, Distributed Public Cloud, Microservices, Developer Population Explosion, Greater Specialization and Verticalization, and Scaling Trust, at <https://idc.com/getdoc.jsp?containerId=prUS44417618>, respectively.

⁶ ITU (2019), Statistics: Individuals using the internet, 2005-2019, at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

connection costs 1% of average monthly income; in the least developed countries, the average cost of getting online is ten times that⁷;

- » Studies consistently show that the great majority of digitalisation's benefits flow to traditional businesses.⁸ This reinforces the importance of bricks-and-mortar companies embracing digitalisation to improve their competitiveness and build resilience — and this is doubly true in the context of post-COVID-19 recovery;
- » Digitalisation is positively correlated with labour productivity⁹, and productivity positively correlated with income growth.¹⁰ These simple realities have far-reaching consequences for policymakers looking to reduce poverty, reduce inequality, and ensure that their citizens — especially the large number of young people entering the workforce each year — will be able to enjoy increasing standards of living - and this holds true for both developed and developing countries.
- » In 2016 it was predicted that by 2021, an estimated 90+% of all business computing will have moved to so-called "Cloud" services.¹¹ Since these services depend upon regulatory outcomes that foster international transfers of data, including private data, and are under no obligation to host computing facilities in a given territory, these policies are key considerations where choices can have long-term economic effects on competitiveness.¹²

Underneath these key considerations is one more, important enough to highlight on its own.

Business to Consumer (B2C) services are the tip of the iceberg

Delving further into services is necessary to understand why the digital economy is the heart of the entire economy - and why our typical conception of "Internet

users" is just the tip of a very large iceberg. Why do services matter so much?

The answer is simple: since the turn of the century, it has been services, not manufacturing, that has been the largest segment of global GDP. This is even the case in developing countries, on average, and as of 2019, services account for the majority of employment globally.¹³

What is not widely understood is that "business-to-consumer" (B2C) services like those we use daily are only about 10% of the economic value proposition of services with a digital dimension. The other 90% is business-to-business services (B2B), such as "cloud" and supply chain management systems and "industrial Internet" applications.

Revisiting our definition of the digital economy

In 2017, the definition used of "digital trade" was "The cross-border supply of goods, products, services and solutions that are instrumental to or avail themselves of online connectivity". This is differently worded but is similar to the classic definition of the Internet as an economic object put forth by the OECD Ministerial in 2008: "... the full range of our economic, social and cultural activities supported by the Internet and related information and communications technologies."

On balance, these definitions still hold up to scrutiny today - and the OECD definition remains the yardstick by which holistic measurement of the broader economic impacts of digitalisation are measured. Let's unpack this a bit.

There is no digital economy without the hardware that the Internet requires as its foundation. This foundation

⁷ Alliance for Affordable Internet (2017), Mobile Broadband Data Costs, at <https://a4ai.org/mobile-broadband-pricing-data/>

⁸ McKinsey Global Institute (May 2011), Internet matters: The Net's sweeping impact on growth, jobs, and prosperity, at <http://www.mckinsey.com/industries/high-tech/our-insights/internet-matters> and McKinsey Global Institute (October 2011), The Great Transformer: The Impact of the Internet on Economic Growth and Prosperity, at <http://www.mckinsey.com/industries/high-tech/our-insights/the-great-transformer>

⁹ National Science Board, National Science Foundation (2020), Production and Trade of Knowledge and Technology-Intensive Industries in Science and Engineering Indicators 2020, at <https://ncses.nsf.gov/pubs/nsb20205/>.

¹⁰ Link to ILO statistics

¹¹ Cisco, Cisco Global Cloud Index: Forecast and Methodology, 2016–2021 White Paper, at <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/white-paper-c11-738085.html>

¹² Link to ECIPE studies

¹³ For services, see Statista.com, drawn from the World Bank's World Economic Outlook Database, at <https://www.statista.com/statistics/256563/share-of-economic-sectors-in-the-global-gross-domestic-product/> for share of employment, see the World Bank data at <https://data.worldbank.org/indicator/SL.SRV.EMPL.ZS>



comprises both the underlying communications infrastructure, as well as the devices that generate all the data that moves across this infrastructure. On top of all that are the services and platform-ecosystems which leverage that physical world infrastructure as a communications medium.

On balance, the findings from our 2017 White Paper have been vindicated by what has transpired in the world of international trade and economic relations since then. We now live in an economic world order characterized by considerably less predictability than when we first began drafting our original White Paper in 2016.

Why the Digital Economy is Unique

As has been pointed out by the OECD and other organizations like APEC that follow and propose policy and regulatory developments in connection with the growing importance of ICTs, it is becoming increasingly futile to talk of the digital economy as an abstraction that is somehow separate from the real economy, since the digital economy is now simply 'The Economy'. Nevertheless, there are a few things that make the digital economy unique, three of which are outlined in more detail in the following sections.

1. What it has done to the nature of intermediation between producers and consumers;
2. What the internet economy has done to information asymmetries; and
3. How the digital economy represents a much more

level playing field than was ever achieved by the traditional economy.

This sub-section also discusses why the digital economy needs its own set of trade rules to ensure the gains experienced thus far are not lost in future.

The Role of Commercial Middlemen: The End of Conventional Intermediation

Traditional business tended to have four or five layers between manufacturers and consumers: production, exporters/importers (sometimes this layer was also handled by the producer itself), wholesalers, retailers, and ultimately consumers. Digitalisation has shifted a lot of retail and even wholesale activities online. If one understands retailers and wholesalers as intermediaries between those that make the products (producers, manufacturers, entrepreneurs), and those that purchase them, then it becomes obvious that some intermediation activities have become redundant, while others have had to adapt to the changes wrought by digitalisation.

Take airlines, for example. Airlines have long operated their own ticket offices where it was possible to book and purchase flights, while also using travel agents to sell tickets on their behalf. These distribution channels have not changed fundamentally, although in today's world there is usually no real need to visit or call either the airline office or travel agency. Today an ever increasing share of travel is being booked online, both for leisure and business, with some sources reporting as many as 75% of airline tickets (in the U.S. at least)

being purchased online. The same is true for hotels. An overwhelming majority of smaller travel agents have already succumbed to market pressures, and the bricks-and-mortar travel agents that remain are almost invariably part of larger chains.

This trend is not limited to the world of travel. Proper Cloth is a U.S. e-commerce company that is in the very conventional business of selling shirts. They have disintermediated the old job of tailor by setting up a very intuitive and functionally innovative website. The website helps customers take their own measurements, select fabrics, collars, buttons and other individually customizable touches by means of very effective visualization software, and which then allows users to purchase and pay for the shirt online. The shirts are then made to order (in Malaysia) and shipped to customers. This gives Proper Cloth a global customer base, as their reach extends to any country with a functioning postal system.

The same is true for Amazon. Amazon began as an online bookseller, and is credited with almost single-handedly disrupting the retail bookselling industry. Many hold it responsible for bankrupting what was for many years America's largest national and global bookstore chain. Since then, Amazon has expanded beyond books, becoming a general platform through which virtually every kind of good is sold, either directly by Amazon or by countless other smaller firms, while also offering many consumer-facing services to customers around the globe. In China, the online retail sector is vastly superior to the traditional bricks-and-mortar sector. China is the world's largest e-commerce market, and sales are increasing every quarter. Many products, particularly consumer electronics, can really only be bought in person by going to very large stores located in corresponding clusters, but these same products are easily acquired online, and same day delivery is a reality in many urban centres, provided the purchase is made before 11 am, with next day delivery for any purchases made after that.

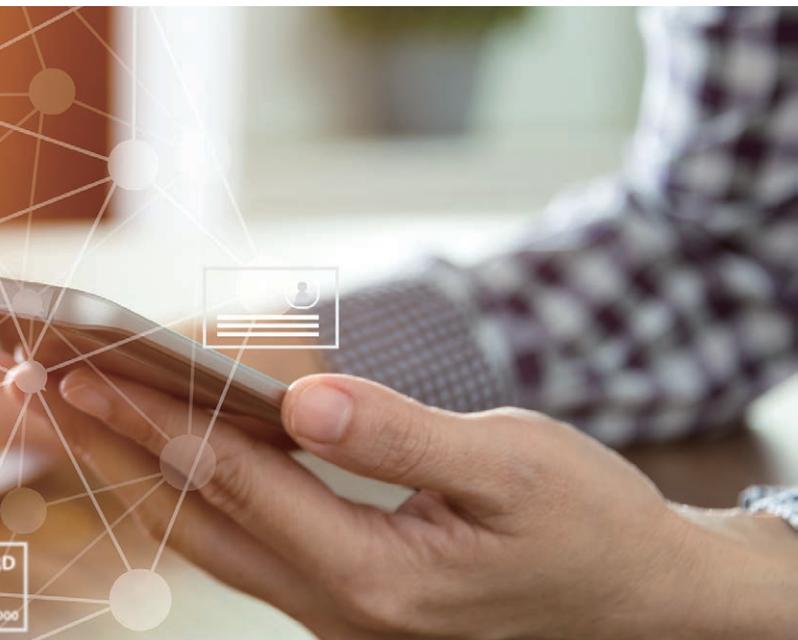
The implications of these changes for the country's retail sector, but also for its urban architecture (e.g. the impact on the country's many shopping malls) is only slowly being understood by private businesses, property developers and government planners. One important implication is that shoppers will primarily be attracted to malls for dining and entertainment, and retailers will have to try and woo these shoppers into making impulse buys. This is yet another way in which



the digital economy is beginning to exert its subtle but profound influence on the lives of city dwellers in the physical world. For people in rural communities, the digital economy has long shifted the balance of power in terms of intermediation and allowed millions to join global value chains (as both buyers and sellers) by removing geographic proximity as a factor in purchasing decisions.

Of course the biggest intermediation industry is arguably banking and financial services. Banks and other financial services firms have been some of the earliest and most enthusiastic adopters of information technology and now represent some of the most entrenched players in the digital economy. Information and communication technologies have allowed banks to move many services online, helping them to achieve efficiency gains in terms of headcount reduction, economies of scale in IT, and other cost savings. It was the CEO of Citibank, who, in 2015, joked that banks had taken so enthusiastically to ICT that today a bank was essentially "a technology company with a banking license."

Although banks are still entrenched as financial intermediaries between those with excess capital (depositors) and those seeking to borrow, the structural interface and the underlying power dynamics of the relationship between banks and their customers have been profoundly transformed thanks to the digital economy, as new entrants into the online and mobile payments spaces proliferate all over the world.



To this end, the emergence of new trade rules specifically including provisions and obligations that would require countries to adopt legal frameworks that facilitate electronic transactions, that provide online consumer protection, and that guarantee a certain degree of protection for users' personal information is a salutary development. The CPTPP also sets out a number of principles on access to and use of the internet for electronic commerce, which would, inter alia, require governments to accept the notion of free trade (described as "access and use") in services and applications available on the internet. Likewise, various international trade agreement frameworks (UNCITRAL, TPP, UNESCAP) are actively promoting the transition to paperless trading in support of the changing nature of intermediation in trade administration procedures. We discuss potential fault lines when it comes to an international consensus on the emerging set of trade agreement obligations governing trade and the digital economy below, but for all intents and purposes, the rules discussed in this paragraph generally seem to enjoy a broad consensus among most countries.

Diminishing Information Asymmetries and the Question of Consumer Trust

A lot has been written about the game-changing implications of having virtually the entirety of humankind's accumulated knowledge easily accessible from a device that most people carry around in their pockets. For most of us, the digital economy is

one in which there is much more transparency and information about products and markets. Prices can easily be compared, product reviews can be read, and consumer decisions are much more informed. In many ways, this has handed power back to users and consumers, and has made it much more difficult to sell under-performing or over-priced products and services. However, making so much information available online has also created vulnerabilities that previously barely existed and has given rise to a massive internet scam industry that regularly defrauds unwitting individuals and insufficiently protected institutions out of billions.

The international trade rules emerging to reinforce the benefits and safeguard against the negative externalities of these changing information asymmetries come in different forms. On the one hand we have emerging provisions on the free flow of information, which seek to ensure that all internet users in all countries have access to the same information and tools online. Clearly different countries take different views on what free flow of information actually means, and what constraints (if any) this principle should be subject to.

Two other emerging rules in the interests of online trust are obligations to prevent unsolicited commercial electronic messaging (spam), and requirements on parties that enter into new agreements to have in place consumer protections according to laws related to transactions online.

The Long-Awaited Level Playing Field

Much has also been made of the Internet's role as the "great equalizer", i.e. a technology that allows SMEs or even micro businesses to compete on a level playing field with multinational corporations in seeking out and winning customers, both in their home markets and abroad. Although the internet and the possibilities afforded by online connectivity have not totally removed power asymmetries between large, well-resourced players and smaller actors, it has opened up a new world of possibilities for many businesses, and has allowed new and innovative business models to emerge that were largely unthinkable (or at least unthought-of) in the traditional (pre-internet) economy. Equally important is the reality that the internet has effectively given everyone using it a megaphone with which to reach a mass audience — a privilege enjoyed by only an entrenched and influential few in the pre-

internet era. Online connectivity furnishes content creators with numerous ways of disseminating original or derived content to a potential audience of billions. Websites like YouTube, WordPress, Reddit, Instagram, Medium and many others provide users the chance to upload and disseminate their own content in a way that is completely unprecedented in human history.

The legal conditions required for the level playing field dynamic to function optimally are also being addressed in part by the new set of emerging international trade rules discussed in this White Paper. The aforementioned principle of free flow of information is an important precondition for this dynamic to work. Another important element, at least for commercial actors, is the ability of e-commerce companies to decide for themselves where to store and process customer data. To return to the example of Proper Cloth for a moment, if Proper Cloth were required to store and process data in every country in which someone avails themselves of its services, this would impose an enormous burden on Proper Cloth, driving up' operating costs to the point that it would probably require the company to stop servicing customers in many countries that enforced such a requirement. This would essentially deny the company the chance to exploit the benefits of the level playing field dynamic discussed here.

Another related matter is the set of rules emerging regarding mandatory disclosure of source code. These rules seek to place limits on the ability of governments to require software companies to disclose their source code as a condition for doing business in a given country.

Requirements like these artificially raise the costs of doing business in those markets where they are enforced, thereby leading to fragmentation of the internet and undermining the level playing field dynamic. The same is true for different national standards and rules on privacy that effectively impede the cross-border flow of personal user data. This issue is also starting to be addressed in international trade agreements, and will be explored in more detail later in this paper. In the next section, we discuss the different degrees of consensus and discord emerging between major economies on the new set of trade rules for the digital economy and where we as a company see the balance of interests ultimately emerging for the benefit of the global ICT industry, as well as internet users and digital consumers all over the world.

Emerging Consensus and Remaining Differences

Different governments have different views on the best way to regulate international trade for the digital economy. We discuss and propose various policy approaches to a limited number of these issues that go a long way toward accommodating the differing positions governments have chosen to take on..

Huawei's approach to the global economy and our place in it

As a company operating in more than 170 countries and territories, our values on international trade were established many years ago. Huawei is a collaborative industry contributor and works with thousands of partners around the world. We cooperate openly and support free trade and fair competition to promote the development of a healthy global ICT industry. We are also a company that places the highest possible premium on compliance and have entrenched the need to comply with all applicable laws and regulations into our strategic decision-making processes and our day-to-day operations. We describe these values in more detail below, before discussing what makes the digital economy such a particular force for enhancing global welfare and why it is so important that different national governments share the same vision for the future trade governance of the digital economy'.

Open Cooperation and Competition

Huawei has an established track record of industry cooperation on a range of technical and policy issues as diverse as 5G, cloud computing, spectrum allocation and ultra-broadband. We are present and actively engaged in all the major standard setting organizations. We participate in global thought leadership fora such as the World Economic Forum, the WTO Public Forum and UNCTAD's e-Trade for All initiative. We have also begun to play an increasingly active role in industry organizations that elaborate and advocate policy positions in different areas of national legislation and international cooperation, such as the Silicon Valley Leadership Group and Digital Europe. Going forward, we see many opportunities for us to expand and deepen our industry advocacy, and we consider doing so an important element of our thought leadership.

Huawei, like many new technology giants over the last 30 years, came from very humble beginnings but



rose to become a global ICT industry leader. From the very earliest days, Huawei was exposed to harsh winds and cut-throat competition. When the company was founded, China's large cities were dominated by incumbent foreign ICT giants, leaving third tier towns and rural areas as the only areas where Huawei could get a foothold. The original Huawei pioneers took the hard-won lessons learned in rural China, and brought them to other markets, expanding globally while partnering with operators and governments to build the backbone telecommunications infrastructure in countries and regions with some of the toughest geographic and climatological conditions on earth.

Huawei employees are no strangers to competition, nor do we fear it - on the contrary we know it is the key to remaining a dynamic and innovative company. In order to operate in the many markets where we partner with our customers, we really only need two things: predictable market access, and to be treated the same as other market actors (non-discrimination). We are in favour of fair and open competition, where all players are afforded market access under the same terms and treated equally by regulators.

These two conditions form the bedrock of our understanding of fair and open competition. We recognize the extreme competitiveness of global product markets in our sector and the rapid pace of change to which these markets are subject. We recognize that in this market, a company's relative

strength is dictated by its ability to innovate and stay at the forefront of technological developments, providing customers and consumers with the latest cutting-edge technologies, products and solutions. The high level of competition in our industry has allowed us to understand the importance of customer-centricity and pushes us to continually strive toward ambitious growth targets. We are no stranger to competition, nor do we fear it. In order to operate in the many markets where we partner with our customers, we essentially need just two things: predictable market access, and to be treated the same as other market actors.

We also recognize, however, that cut-throat competition in the absence of clear market rules can be detrimental to everyone. That is why we at Huawei place a heavy emphasis on operating within the rules of the markets in which we do business. We have a very strong focus on compliance in our operations and have instituted internal procedures and oversight to ensure all our employees comply with local market rules.

We feel strongly that markets with transparent and predictable rules that are enforced fairly against all actors irrespective of their nationality are the best markets to do business in, not just for Huawei but for all industry players. We always seek to strike a reasonable balance between competition and cooperation, to maximize benefits for our partners in government and industry, for the global ICT sector and, most importantly, for consumers worldwide.

Trade and Investment Liberalisation

Huawei view trade and investment liberalization as important drivers and facilitators of global competition. As such, as a company we advocate in favour of closer economic integration between all of the countries and territories in which we operate, as well as in favour of more open goods and services markets globally. We recognize that over the last two decades of our own growth story, we have benefited from and contributed to positive business environments we have encountered in the course of expanding around the globe, selling equipment, nurturing local talent, investing in domestic capacity, engaging in research and development, and establishing global supply chains across 170 countries. We recognize that our global success has been as much about our ability to trade with and invest in the many markets with which we engage as it has been about our ability to innovate.

Respect for Intellectual Property Rights

In Huawei's view, respect for intellectual property rights, and the non-discriminatory enforcement of IPRs, as an indispensable precondition for the smooth conduct of business globally. We are now a company at the forefront of innovation across all of our goods and services offerings. As such, we have also become a global leader in patent filings. Among companies based in mainland China, we are the number one filer of patents in the United States. Within China, we are the number one filer of patents overall, and have filed close to 50,000 patents as of the time of writing. Outside of China, we have been granted almost 37,000 patents.

We also have patent licensing agreements with all the other major industry players, subject to which we allow them to use our patents and vice-versa: an example of industry cooperation for the benefit of the global industry and consumers. We see respect for intellectual property rights as an inalienable part of our broader compliance mandate, and have several hundred IP lawyers working to ensure compliance globally.

Where we are today - and why it matters

In the next section of this paper we examine what has changed since 2017, going into more detail on some of the developments referred to at the start of this section - developments that were important three years ago but which have become even more important today.



In the final section of this edition, we suggest what these changes mean in terms of new priorities for international cooperation and we set out new findings.

The COVID-19 Pandemic

One issue that we couldn't have predicted in 2017 was a global pandemic in 2020.

It is widely understood that the pandemic has accelerated existing trends for the digitalisation of economic activity. It has allowed digitally enabled firms to continue trading while others cannot. These trends are likely to continue, albeit at different intensities depending upon the sector. This should be especially true in services, but also for goods where services inputs or bundled services which can be delivered remotely form a key part of the value addition.

It is only sensible to suggest that the recovery from COVID-19 is likely to result in accelerated adoption of automation, and increasing servicification, adding further pressure on firms and countries unable to enjoy 'the benefits of digitalisation due to low levels of connectivity or high costs.

That in turn may well have a considerable knock-on effect on employment — especially for countries that have relatively low levels of internet use across society. Among other effects, this will reduce the ability of workers to gain the skills necessary to compete for relatively ICT-enabled jobs. The challenge for developing countries will be particularly acute as there

is already a squeeze on their traditional points of entry in supply chains.¹⁴

Simply put, the challenges of global recovery from the pandemic cannot be met without extensive digitalisation at a much more rapid pace than was already needed. While holistically addressing the trade related aspects of this is beyond the scope of this paper, we will address these aspects in a further white paper in the near future - and provide some ideas throughout the rest of this paper.

Supply-chain shocks

Rising tensions and increasing unpredictability

There is no doubt that the world is a much less predictable place today than it was when we wrote the first edition of our Digital Trade White Paper. The escalation of trade tensions by the Trump administration has had far-reaching ripple effects. The IMF credits the rise in trade tensions between the US and China for the subdued nature of the growth of the global economy generally, and highlights persisting uncertainty for global technology supply chains as ongoing sources of stress to growth prospects. In addition, an increase in the probability of a hard Brexit and the disruption this is likely to unleash, as well as a rise in geopolitical tensions between South Korea and Japan are both further grounds for pessimism.

The biggest shock to supply chains in recent times was the decision by the US' Department of Commerce to place Huawei and a number of its subsidiaries around the world on the Entity List, thereby essentially prohibiting any US companies from doing business with Huawei. The effects of this move threatened to be so disruptive to US companies that, barely a day after the decision was announced, the Department of Commerce was forced to roll it back and provide a 90 day reprieve, which was subsequently extended by another 90 days. The effects of this on Huawei were significant, since we rely on US suppliers for a number of components, such as processors, screens for our smartphones, and of course operating software for almost all of our consumer devices (laptops, smartphones, tablets, and watches). However the

impact on a number of Huawei's suppliers in the US was even more significant, including Flextronics, FedEx, Qualcomm, Intel, Micron, and a number of lesser known suppliers with much greater exposure to Huawei, such as NeoPhotonics (a supplier of optical technology), and Qorvo, which provides components for wireless signal transmission.

Almost certainly, the sudden move to ban US suppliers from doing business with Huawei will inflict more significant long-term damage to the United States itself than it will to anyone else. The looming threat of subsequent unilateral disruption to supply chains has put the world on notice that the United States is no longer the predictable and reliable source of parts, components, services and intellectual property that it once was. Hermann Hauser, co-founder of the UK chip manufacturer ARM summed this up very clearly:

"Every single supplier in the world will start thinking of how to reduce the threat of their production being terminated by an American president. All the discussions I have had with companies in Europe at the moment are about them going through their intellectual property portfolio and designing American intellectual property out, which is terribly sad and destructive."

Probably the most consequential result of the Entity List action is that it undermines the business case for locating research and development, production, or any other assets in the US. Companies are now aware that they could be forced to comply with unpredictable edicts from US federal government agencies, and become collateral damage in the US pressure campaign on China and Chinese technology companies.

Another imminent trade confrontation awaits at the frontier of digital technologies in smart and autonomous cars. The world's biggest market for car manufacturing and sales is China but US sanctions are closing the market to competition because Europe's car industry relies on key elements of US technology. In response, EU manufacturers are accelerating plans to manufacture in China without US semiconductors or technology, anticipating that the US will increasingly block the export of specific chips to China. A major question to be answered in 2021 is how we avoid a technology schism

¹⁴ Coulibaly, B. and Foda, K. (2020), The Future of Global Manufacturing. [Blog] Brookings Institution, Growth in a Time of Change, at <https://www.brookings.edu/blog/up-front/2020/03/04/the-future-of-global-manufacturing>.

and promote access to technology for all.

It has also disrupted very consequential and profitable relationships for companies including Google and Apple, in the smartphone and personal computer operating system spaces respectively. The global market for smartphone operating systems has been dominated for many years by these two companies. This dominance has now been called into question by the Entity List action. It has motivated Huawei to accelerate the development of a new smartphone operating system - but it is also accelerating similar moves from other mobile hardware vendors. This has injected additional competition into a space where previously there was very little. For Huawei, it also offers the opportunity to design a new system from the bottom up with the latest software, as an alternative to systems with different architectures and multiple systems.

The development of smartphone operating systems is not the only digital arena where there is a serious need for more competition. There are many areas where consumers will benefit from the innovation and efficiencies that come from true competition. Take connected cars, for example. Automotive industry experts have praised the arrival of new competitors in the design of innovative in-car systems.

Seen by many as a more advanced alternative to CarPlay and Android Auto, both of which have, according to reports,¹⁵ been plagued by connection faults,¹⁶ the new competitor, HiCar¹⁷ allows drivers to connect their phones to a car and then use a series of applications, such as navigation tools and music players, on the head unit. HiCar's use of a dedicated smart screen, which can be installed in almost any vehicle, has opened up competition in the market. There are plans to install it in over 5 million cars by the end of the 2021 and, as is the nature of competition, it will put pressure on CarPlay and Android Auto to produce better products for consumers in the

automotive sector. Competition in digital innovation is critical to digital trade.

Finally, the dramatic shift of the world's largest economy from a predictable force that is consistently in favour of trade liberalisation, to an unpredictable actor sporadically creating trade restrictions, has been damaging to the multilateral trade architecture of which the US has been one of the main architects and main beneficiaries. The Trump administration's approach to trade restrictive policy interventions is being copied by other countries. In products as far afield from technology as the key medical technologies necessary to fight the COVID-19 pandemic, discriminatory trade decisions by governments worldwide have grown significantly since the US' dramatic shift in its approach to trade policy.¹⁸

Technological breakthroughs and uptake

5G: the next generation of communication network technologies

"5G" is widely and rightly recognised as a major leap in mobile phone connectivity. The benefits of 5G are many, including much greater network capacity, significantly faster throughput speeds, noticeably lower latency, and much greater network security. Because these capabilities have all become available in one technology at once, we are still unable to imagine all of the new applications this technology will unlock, but we can predict that it will have a marked impact in a number of fields where the constraints that 5G will overcome have been holding back progress.

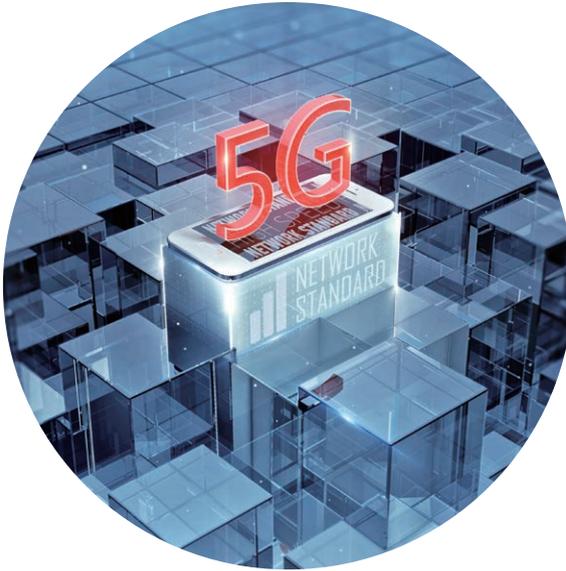
This is perhaps most visible to the consumer in the virtual and augmented reality spaces, where the possibilities that 5G promises will bring major breakthroughs in the applications of these technologies for industrial internet, manufacturing, productivity and entertainment. Another area where

¹⁵ Auto Evolution (December 2020), at <https://www.autoevolution.com/news/apple-carplay-problem-in-volkswagen-cars-could-signal-a-widespread-issue-153373.html>.

¹⁶ Auto Evolution (December 2020), at <https://www.autoevolution.com/news/android-auto-plagued-by-connection-problems-after-the-december-2020-update-153426.html>.

¹⁷ Auto Evolution (December 2020), at <https://www.autoevolution.com/news/huawei-announces-new-car-tech-that-puts-android-auto-and-carplay-to-shame-153430.html>.

¹⁸ Global Trade Alert, based in Switzerland, is the most comprehensive monitor of trade practices that affect world commerce. Its reporting shows increasing incidences of harmful trade interventions over recent years. See Global Trade Alert (22 Dec 2019), "Going it Alone? Trade Policy after Three Years of Populism," Chapter 5, at <https://www.globaltradealert.org/reports/download/48>. The statistics on US trade interventions in recent years compared to previous years are also illuminating, see https://www.globaltradealert.org/country/222/period-from_20090101/period-to_20211114/day-to_1231.



5G promises to be a game changer in the Internet of Things (IoT) space, where it will have a dramatic impact in factory automation, smart agriculture, logistics and supply chain management, among other areas. It will also be a significant enabling technology for autonomous vehicles, innovation in healthcare, and so many other areas.

The scale of the economic impact is staggering: McKinsey Global Institute estimates that in just four areas: mobility, healthcare, manufacturing automation, and retailing, implementation of 5G could increase global GDP by US\$1.2 to US\$2 trillion.¹⁹

In 2020 the increased demand has put strains on telecoms infrastructure. A recent EIU report on risks for 2021 explains simply how economies recovering from COVID-19 will have to invest in digital infrastructure: The surges in demand seen in 2020 occasionally overwhelmed servers. If demand remains this high, telecom companies will need to invest heavily to meet it (and that is before factoring in natural growth). However, this is coming at a time when telecom companies' revenues are being squeezed. Only a comprehensive 5G network can deliver the low latency high bandwidth and transmission speeds for the

explosion of growth in digitalisation²⁰. In particular, big data requires extensive storage and AI analytics to achieve its full potential. Although the pandemic delayed many 5G auctions, the EIU estimated 47% of the 60 markets EIU covers would launch a 5G network by end-2020. Some of the remaining countries will try to make up for lost time by carrying out auctions in 2021. As future competitiveness will be defined by a country's degree of digitalisation, and this directly links to quality of the digital infrastructure, there are dilemmas and difficult decisions to be made on the allocation of investment for recovery and growth of economies around the world. Many countries are prioritising substantial investment in infrastructure. Although there is widespread pressure due to fiscal constraints from high levels of pandemic-triggered debt, many countries are also well-positioned to take advantage of record-low interest rates.

Despite these risks, digitalisation will be a key driver of economic recovery. A recent EU report claims that, by 2030, digital technologies will contribute a cumulative €2.2trn (US\$2.5 trillion) to the EU economy, a projection that underpins the EU's pro-digital policies. The information and communication industries alone now account for 8% of the EU's GDP. Accenture estimates the value of the whole digital economy at around 22% of global GDP. Given the current economic crisis, this is a contribution that cannot be ignored²¹.

5G and international trade

Given the scale of the economic opportunity, the trade policy implications of 5G are also becoming more obvious. As governments have slowly become more aware of the strategic significance of 5G communications networks, the issue of network security has risen to prominence as a global challenge requiring a global solution

However, rather than driving collaboration on the topic, some have turned to protectionist measures or other trade restrictive interventions. This, in combination with popular ambivalence about globalisation has even led some people to question the principles of free trade,

¹⁹ McKinsey Global Institute (February 2020), "Connected World: An evolution in connectivity beyond the 5G revolution," at https://www.mckinsey.com/~/media/McKinsey/Industries/Technology%20Media%20and%20Telecommunications/Telecommunications/Our%20Insights/Connected%20world%20An%20evolution%20in%20connectivity%20beyond%20the%205G%20revolution/MGI_Connected-World_Discussion-paper_February-2020.pdf.

²⁰ The Economist Intelligence Unit (December 2020), Digital disruption: risks and opportunities in the shift to online.

²¹ The Economist Intelligence Unit (December 2020), Risk Outlook 2021 December 2020

open markets and non-discrimination for the products, services and equipment that power these networks. Huawei, as a 5G industry leader, is an example of a success within the rules-based multilateral trading system that comes from a country whose economic rise has been meteoric and disruptive to world markets. Some governments have started to question principles which have energised global economic growth and prosperity and dramatically reduced poverty over the last 70 years due to such examples. This is a risk-laden train of thought and a setback for companies, businesses and consumers who stand to benefit from the most technologically advanced and cost competitive 5G technologies and solutions. These constituencies would be best served by an approach that is non-discriminatory, minimally trade restrictive, adheres to international standards where they exist, and favours international cooperation over unilateral interventions that risk having far-reaching and stultifying effects on markets.

The question of who will be allowed to compete for 5G equipment purchases in developed countries has still not been resolved. Restricting competition is a lose-lose-lose scenario, as has been demonstrated in a recently published study by Oxford Economics. Operators will pay more for 5G equipment, it will take longer to implement 5G networks, consumers will pay more for them, and the delays in rollout will have large negative effects by delaying the societal benefits and other gains from waiting to have access to this transformative technology.

The Oxford Economics study²² is worth closer examination, but the top-line numbers on the impact of restricting competition in European markets is sobering: looking at a middle-ground approach to the modelling finds that annual investments to roll out 5G would rise by US\$10 billion through 2035; by 2023 56 million Europeans would have suffered from delayed access to 5G technology, and US\$50 billion in GDP would be irretrievably lost due to the delay. Given the importance of digital connectivity to economic recovery, pursuit of a restrictive approach would be inadvisable.

5G will have other large and positive implications for the global trading system. We anticipate that services and solutions that rely on moving large amounts of data across networks and onto users' end devices, but that have until now been held back by latency and bandwidth constraints, will experience massive gains. The ability to place sensors on just about everything and have these sensors collect and upload data in real time to cloud servers running different AI applications will also allow for massive efficiency gains in all areas of transportation and logistics, whether maritime, road, rail or air, or any combination thereof. Any kind of service that can be traded across borders (i.e. Mode 1 in WTO services trade parlance) is likewise predicted to experience considerable gains in the 5G era, which will produce upward growth effects on everything from telemedicine, online education, IT services, accounting, finance and many other industries, the combined annual revenues of which are worth trillions of dollars globally. And this is just for those use cases we can already imagine.²³

This is obviously true in the areas of video streaming and online interactive gaming. These sectors make an interesting case in point, especially given the dramatic impact of the pandemic's impact on this high-value sector. NPD Group²⁴ found that overall consumer spending on video gaming in the US reached US\$11.6 billion in the second quarter, while 2.7 billion gamers are expected to spend US\$159.3 billion on games in 2020, according to a forecast by market researcher Newzoo and reported by VentureBeat.

The pandemic has dramatically increased revenues and usage figures in this sector. For example, NPD Group said that video game spending in the US grew 30% in the second quarter year over year, reaching its highest quarterly spending levels in US history, Nintendo's operating profits rose 428% in the most recent quarter, reaching US\$1.4 billion, and Electronic Arts' revenue grew 21% in the most recent quarter.

A major development in this space was Google's Stadia announcement in 2019. The service promises

²² Oxford Economics (December 2019), Economic Impact of Restricting Competition in 5G Network Equipment, at <https://www.oxfordeconomics.com/recent-releases/Economic-Impact-of-Restricting-Competition-in-5G-Network-Equipment>

²³ For an excellent summary of the commercial applications and societal benefits of 5G, with associated interdependencies, see World Economic Forum (2020), White Paper: The Impact of 5G: Creating New Value across Industries and Society, at http://www3.weforum.org/docs/WEF_The_Impact_of_5G_Report.pdf.

²⁴ NPD Group (August 10, 2020), U.S. Consumer Spend on Video Game Products Continues to Break Records, at <https://www.npd.com/wps/portal/npd/us/news/press-releases/2020/the-mpd-group-us-consumer-spend-on-video-game-products-continues-to-break-records/>

to do for games what Netflix has done for films: store large games in the cloud and deliver them to players via a video stream onto just about whatever device they want to use. Clearly, 5G is pivotal to these use cases as, unlike Netflix, where the data stream is a download with trivial uploads, meaning it is relatively forgiving of network latency, Google Stadia depends on low latency for both uploads and downloads to ensure satisfactory gaming experience.

Underpinning the digital economy and trade, data analytics augmented with AI will give new insights, enhance productivity, and deliver efficiency gains. Already in 2020 this prospect has driven consolidation in the data market, including S&P Global's acquisition of IHS Markit, the London Stock Exchange's purchase of Refinitiv, and Intercontinental Exchange's deal to buy Ellie Mae. Although data markets will be affected by new regulations on data localisation (currently in the concept stage in many countries including, India, Indonesia, Vietnam, Russia, China, and Brazil), this trend will drive growth in edge computing²⁵, so that data can be stored and analysed locally. This will present opportunities for the creation of local added value, instead of concentrating profits in a handful of global tech hubs.

5G promises to enable business models and use cases that we have yet to imagine. Just like the combination of 4G LTE and smartphones gave birth to the app economy and solutions such as Uber, Spotify, and Instagram, 5G will provide the technological preconditions for applications, use cases, and business models that we have simply not yet thought of. For policymakers, it is important to realize is that these new business models will be conceived, tested, brought to market and scaled only in regulatory environments that do not overly inhibit innovation.

Artificial and Remote Intelligence

Artificial Intelligence (AI) and Remote Intelligence (RI) are two technologies that are already starting to have a profound and far-reaching impact on labour markets across the world and thus on competition between countries. Platforms like Upwork or Freelancer.com allow people to source freelancers from anywhere in the world and task them with work that would normally involve hiring someone



locally or allocating tasks to a firm's existing pool of employees. The difference is that it's very easy to hire and fire a freelancer and to pay him or her just a fraction of what a local employee costs (with huge savings in social security, pension-plan and medical benefits). The emergence of freelancer platforms is one very tangible example of how Remote Intelligence is coming soon to a workplace near you, but the most significant economic impacts are not likely to be platform-intermediated 'gig economy' jobs. The impacts of Artificial Intelligence on all aspects of production, manufacturing and distribution are likely to be even greater, as new and more powerful software is programmed to replicate and replace jobs currently being performed by humans at no additional per-unit cost (just the cost of writing, implementing and updating the software). The really remarkable thing about AI and RI is just how suddenly change will come, and how disruptive this is going to be to labour markets in both the developed and developing world.

The Impact on Trade of Artificial and Remote Intelligence

The inevitable backlash this is going to cause has already begun. In many ways, the political upsets we have seen recently, such as Brexit in the UK, and the election of a populist president in the United States, are simply a reaction to the marked decline in relative living standards and economic security felt by a significant

²⁵ The Economist Intelligence Unit (December 2020), Digital disruption: risks and opportunities in the shift to online.

segment of the population in these two electorates. This has been caused by factors such as globalization, the outsourcing of jobs to lower-cost locations in the developing world (Mexico, India, and China to name just three), and, in the case of the United Kingdom, the labour-market competition brought by closer economic integration with the European Union.

AI and RI promise to massively ramp up and accelerate these trends and thus exacerbate these tensions. This has already caused policymakers in some countries to question the underlying rationale of hitherto uncontested truths, such as the desirability of international economic cooperation and closer economic integration, the economic benefits of progressive trade liberalization, and the need to avoid protectionism. We are likely to see even more of this in future, which will mean the onus will be on governments to provide better, more easily accessible, and much more effective assistance to their working-age populations in the face of all this workplace disruption (we discuss this in more detail in the next section under the heading "Protect workers not jobs").

Blockchain

Blockchain is a specific technology, the most widely-known Distributed Ledger Technology (DLT) in wide use. A blockchain is essentially a shared database in which each entry must be confirmed and encrypted in order to be seen as authentic. Implementations of blockchain use the latest cryptography and, because they are peer-to-peer, no intermediary is required to authenticate an entry. Blockchain can be used to record any structured information, including payment transactions, personal information (such as a person's date of birth, marital status, driving record), or a shipping manifest. Amongst its key features is that it securely creates a 'tamper proof' log of all transactions, a transparent audit chain. One famous blockchain expert, Don Tapscott, has described the technology as a platform for truth and a platform for trust, allowing the world to have a truthful and immutable record of everything.

Distributed ledger systems like Blockchain appear to solve many problems which have plagued the Internet economy. The biggest of these problems by far is trust. In fact one of the biggest challenges for any platform offering a P2P service is establishing trust. So far, the best solution that has been found to this problem is to allow platform users to rate

one another. This was pioneered by eBay, and is now used almost ubiquitously by services such as Uber and AirBnB. But blockchain technology creates trust by making information verifiable and by removing the risk of records being tampered with, so we don't actually need to trust individuals as a source of authenticity of information, we just need to trust the underlying technology. Another problem with the internet economy that blockchain can solve is that of power asymmetry. Because we don't know who we're really dealing with on the internet, transactions have traditionally needed to be verified by intermediaries, such as banks. In the end, ensuring identities can be verified must be reconciled with data protection and privacy. This makes the role of identity verification legally complex - but of fundamental importance. In a world of blockchain, the power of intermediaries in verifying identity would be greatly diluted, since they would not be required to verify 'identities or information, or to settle transactions. This dimension to the discussion of distributed ledger technologies like blockchain is not as widely discussed as it should be.

Blockchain's potential to impact international trade

The potential applications of blockchain in international trade are manifold, since trade, like so many other fields of commercial interaction, requires extensive record-keeping and documentary processes. Beyond the obvious applications — in trade finance, trade credit insurance, facilitating customs clearance procedures, reducing customs fraud and corruption,



and certifying compliance with import licensing rules, technical standards and sanitary and phytosanitary requirements — the technology could also be used in areas such as supply-chain traceability, combating trade in counterfeit products and preventing illegal trans-shipment.

To give just one example of how transformative DLTs like Blockchain can be, let us consider the significant improvements such a ledger could bring to the accuracy of trade data. The WTO has estimated²⁶ that 60% of trade finance requests by MSMEs are denied, resulting in a trade finance gap of US\$1.5 trillion. A key element to reversing this is to use technology to allow automation of shipping and receiving documentation. Current process for such documentation is complicated and makes it time consuming and slow to gain trade finance. Recent initiatives to move trade finance processes online, using DLT-based systems, can reduce the time required to finance a goods trade transaction from months to hours.²⁷ At the time of writing, there are still a number of regulatory and technical hurdles to overcome, the biggest one being the need to digitize all of the current record-keeping and documentary platforms and render them mutually interoperable. This will take time, coordination and resources, but the efficiency gains are so great, even in the short term, that it is a matter of when, not if, the entire landscape of trade in goods will be entirely transformed — for the better — by these technologies.

Additive manufacturing (3D printing)

Additive manufacturing as a technology has been around for several decades now, and predictions that it would disrupt manufacturing and thus international trade in goods have been around for almost as long. So far, commercial applications remain limited and relatively small scale.

It is certainly true that additive manufacturing cuts lead times between product conceptualization, development and go-to-market dramatically. In theory, additive manufacturing allows production to

take place closer to consumption. In addition to the time saved, this has all kinds of positive implications for the environment (given the heavy carbon footprint of the global maritime shipping industry, airfreight, and global logistics and supply chain networks generally). However, the economics of 3D printing are still not conducive to it replacing the "traditional" manufacturing that still dominates global product markets. For one, the unit cost of manufacturing large quantities of identical parts and components is still cheaper than producing them using additive manufacturing. Secondly, where a product requires specific material inputs for the sake of functionality or as a result of consumer demand (inputs such as fabrics or rare-earth materials), then 3D printing is no substitute for traditional manufacturing techniques. The reality is that 3D printing works very well for products with high degrees of customization, and low recurring demand. This is where the technology has really taken hold, in areas such as medical implants, prosthetics, and spare machine parts for airplanes. Additive manufacturing is also a boon for prototyping. As Wolfgang Lermacher and Martin Schwemmer have remarked, writing on this topic for the World Economic Forum (WEF), "3D-printing holds high potential in those areas where it is a good fit. But, for now, its revolution has clearly not yet come."²⁸

3D printing and international trade

A 2016 paper by the Swedish Board of Trade discusses a number of the trade related issues that arise in connection with this new technology. Although this paper likely overestimates the impact additive manufacturing will have on manufacturing in the short to medium term (as discussed previously), it does highlight a number of interesting conceptual issues, including the shift in focus that 3D printing represents: a shift from trade in goods towards trade in services. No WTO Member has scheduled specific commitments in services related to additive manufacturing, so in some ways, this represents uncharted territory, despite the fact that WTO rules are essentially technology neutral and many existing commitments may well facilitate trade in

²⁶ World Trade Organization (2018), World Trade Statistical Review, at https://www.wto.org/english/res_e/statist_e/wts2018_e/wts2018_e.pdf.

²⁷ Ganne, Emmanuelle, World Trade Organisation (2018), Can Blockchain revolutionize international trade? Can Blockchain revolutionize international trade?, at https://www.wto.org/english/res_e/publications_e/blockchainrev18_e.htm.

²⁸ World Economic Forum (2017), 3D-printing might not kill global trade after all. Here's why, at <https://www.weforum.org/agenda/2017/10/3d-printing-global-trade-supply-chains/>.

3D-printed goods. In terms of negotiations that are currently ongoing in the area of electronic commerce, there is actually little to no specific reference to the transfer of data for the purpose of 3D printing, so one must assume that rules on the free flow of data, and corresponding disciplines of when to restrict data flows will apply mutatis mutandis to data flows that support cross-border additive manufacturing services (i.e. where the owner of the underlying CAD file and the recipient of the finished good reside in different countries). However, there are other areas of international trade where 3D printing will have an impact on rules and their enforcement, including intellectual property rights, trans-shipment, and export controls. At present, the economic scale of 3D printing has not yet reached levels that make it necessary for policymakers to start drawing up specific rules targeting any negative externalities that may arise in connection with these technologies. This is likely to change as the commercial uptake of additive manufacturing spreads.

Sound trade policies to support innovation

The key issue for government and private sector trade experts is how to optimize investment conditions to accelerate digital economic recovery. Because innovation plays such a central role in driving the profitability, and thus the viability, of firms, it is important that governments, when seeking to curtail some of the negative and unintended consequences of disruptive technologies, refrain from measures that have a throttling effect on innovation and healthy competition. Some years ago, we predicted that certain regulatory obligations would become more common. These included:

- » Restrictions on the transfer of data outside certain jurisdictions;
- » Obligations to store and/or process data within the territory of origin that raise the costs of service providers and the whole Cloud value chain;²⁹ and
- » Obligations to give government agencies access to source code as a condition of market access.

We also predicted that sufficient protection for intellectual property rights would be insufficient in many countries and regions.

These obligations and failures like these have far reaching negative consequences for the entire digital economy, and will not be conducive to the new era of innovation that technologies like 5G, AI, blockchain or 3D printing promise to usher in.

Three key principles that governments should use to underpin all regulation of the digital economy are:

- » Non-discrimination, in principle and in their effect, both within their territory and between national and foreign firms;
- » Minimal restriction on trade;
- » A level playing field for all players, regardless of their country of origin or the country of origin of their products or services; and
- » Technological -neutrality, which helps regulations stay current and avoid distorting impacts as new technologies and business models arise faster than regulatory approaches to them can adapt

Regulatory efforts that meet these tests are also much less likely to infringe obligations WTO parties have to one another under those agreements as well, given the first three provisions are foundational to adherence to WTO obligations.

Trade and investment regimes that are not conducive to innovation in the digital economy are unlikely to reap the benefits of new technologies in ways that support national competitiveness.³⁰ Countries can avoid this by following international best practices in policy areas of critical importance to both trade and investment as well as innovation. Where international norms or best practices are still emerging, policymakers should consult extensively with industry before they act, so that they can find regulatory solutions that achieve the desired public policy objectives without unanticipated negative consequences such as invasive and costly interventions

²⁹ For details on the real impacts in economic terms of these policies see Deringer, H., Erixon, F., Lamprecht, P., and van der Marel, E. European Centre for International Political Economy (2018), Do Data Policy Restrictions Inhibit Trade in Services?, at <https://ecipe.org/wp-content/uploads/2018/10/Do-Data-Policy-Restrictions-Inhibit-Trade-in-Services-final.pdf>

³⁰ For further details on Huawei's view on what needs to be done to optimize investment conditions to accelerate digital economic recovery" see Huawei (May 2020), Trade and Investment: Accelerate Digital Economic Recovery, Inward Investment: Priorities for Economic Recovery, and the webinar report on How to optimize investment conditions to accelerate digital economic recovery, all three available at <https://waipa.org/announcements/waipa-huawei-webinar-19-may-2020/>

that undermine existing businesses or have trade distorting effects that unfairly benefit one set of actors to the detriment of another. These are the regulatory challenges for policymakers as we step into an exciting new era of innovation centred on the rollout of next generation communication technologies, AI, blockchain, and additive manufacturing.

The next section discusses international economic cooperation as a way for governments to confront the regulatory challenges that these new technologies bring. This issue is especially important given the globalised nature of commerce online.

SMEs and Global Value Chains

Even before the COVID-19 pandemic, there was substantial evidence that Internet access is a prerequisite for joining many global value chains (GVCs) and, furthermore, that the level of ICT usage and sophistication in a firm is an important consideration when multinationals who operate GVCs look at an MSME as a potential supplier.³¹ There is a strong upside in participation in GVCs, so ensuring more MSMEs can participate in GVCs should be a policy priority — especially for developing countries.

One proposal, made by the Business 20 to the G20 leaders in 2020, is for a "GVC passport." Under this proposal, G20 countries would collaborate to create an official (digital) document recognised within the whole GVC, across all participating countries' borders, that would provide secure, verifiable, and traceable information on the firm holding it. It would include all basic information about the firm as well as proof of verification of a series of regulatory and compliance requirements by the firm in its home country. Obviously the broader the list of compliance requirements the firm has met, and the more information of commercial value present, the greater the passport's value.

The proposed passport is envisaged as a dynamic document that can evolve and incorporate new data over time.



Like the passports of individual citizens, the GVC passports would help a firm be recognized as a legitimate business partner that complies with the rules and regulations relevant to the GVC in which it operates.³²

³¹ For more on this in an Asian context particularly see APEC Policy Support Unit (2014), *Integrating SMEs into Global Value Chains: Policy Principles and Best Practices*, Issues Paper No. 6, at <http://publications.apec.org/-/media/APEC/Publications/2014/5/Integrating-SMEs-into-Global-Value-Chains-Policy-Principles-and-Best-Practices/Integrating-SMEs-into-GVCs-final-21Apr.pdf> and ADB (2015), *Integrating SMEs into Global Value Chains: Challenges and Policy Actions in Asia*, at <https://www.adb.org/sites/default/files/publication/175295/smes-global-value-chains.pdf>

³² For more on the passport, see <https://www.b20saudiArabia.org.sa/news/reducing-barriers-reinvigorating-firms-growth-post-covid-19-through-a-gvc-passport/index.html>



Part II: How the International Community is Addressing the Digital Economy and What's Missing

International trade cooperation is back on track

International cooperation in global economic governance has faltered since 2017. We are no longer living in an era of ongoing TISA negotiations or pending breakthroughs in US-EU economic integration due to the failure of the TTIP project. Instead, the current operating environment is one characterized by considerable uncertainty over Brexit, mounting trade tensions between the US and China, and friction between Japan and Korea, as well as a full-scale retreat by the Trump administration from leading roles in key institutions such as the WTO, the WHO, G7, Paris Agreement on Climate Change, G20 and others.

The good news is that the Regional Comprehensive

Economic Partnership (RCEP) has just been finalized between the Asia-Pacific nations of Australia, Brunei, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, New Zealand, the Philippines, Singapore, South Korea, Thailand, and Vietnam after many years of negotiations.

While many positive comments have been made about the agreement, Prime Minister Lee Hsien Loong of Singapore put it very well when he said, "The RCEP shows Asian countries' support for open and connected supply chains, freer trade and closer interdependence."

The RCEP covers 30% of the world's population and economic output. It is a major step forward for multilateral collaboration, regional economic integration and Huawei's values of free-trade,

open markets, fair competition, level playing field, multilateral rules, non-discrimination.' It is also the first trade agreement to bring together China, Japan and South Korea. It is worth highlighting that the US is now outside both of the main plurilateral trade agreements in Asia, the RCEP and the CPTPP.

The RCEP agreement, like all trade agreements, has strengths and weaknesses; on the plus side, it unifies regional "Rules of Origin" in all 15 countries. It will boost trade, energise SMEs, save costs, reduce bureaucracy, and accelerate trade. Europe and US consumers will benefit from lower prices and reduced inflation from the cost savings brought by the RCEP.

On the other hand, India declined to participate at the last minute, though it may join at a later date. The Chapter on e-commerce is very limited; there is no agreement on rules for cross-border data flows or a customs duty moratorium on data transmissions. Unlike the CPTPP, which covers 100% of traded goods, the RCEP only covers 90%.

In the last two years we have also seen the conclusion of FTAs between the EU with Canada, Japan and Mercosur, Australia and Indonesia, as well as between US with Mexico and Canada, to name just a few. Even at the WTO, we have seen the launch of new negotiations on electronic commerce and the start of "structured discussions" in the area of investment facilitation which may result in new negotiations and eventually an agreement to mimic the success of the 2013 WTO Trade Facilitation Agreement. In Asia, the 11 remaining countries of the TPP agreed to bring this agreement into force, renaming it the CPTPP after the US withdrawal at the start of the Trump administration.

Over the next few sections of this White Paper, we will provide an overview of some efforts underway at the time of writing in different areas of international economic cooperation. We will focus on those affecting the two mutually reinforcing policy domains of increasing access to and use of connectivity and horizontal regulatory cooperation on the fundamentals of digitization, as well as their impact on enabling inclusive economic growth across the digital economy.

Based on our values, Huawei has promoted free trade & access to technology and connectivity for all for many years. We strongly support the United Nations' Secretary-General's Roadmap for Digital Cooperation and its 8 goals.³³ Meeting the challenges of this roadmap will require global public-private partnership. As a company we're committed to doing our part.

Designing best practices at the OECD

The Organisation for Economic Cooperation and Development (OECD) has long been at the forefront of negotiations on fundamental aspects of digital economic cooperation and subsequently advocating policy positions on the optimum regulatory and policy positions to take vis-à-vis issues like internet governance, trade and investment in the digital economy, and more recently Artificial Intelligence.

At the OECD's Going Digital Summit, the final synthesis report³⁴ that suggest action on several fronts relevant to this paper. The integrated policy framework the organisation operates under concerning digitalisation endorsed an approach to digital trade policy development that involves a plurality of stakeholders, including governments, civil society and the business community³⁵. Finally, the OECD advocates in favour of approaches that are, "informed by the interests of a range of countries at different levels of development."

In May 2019, forty-two nations, including all thirty-six OECD member countries as well as Argentina, Brazil, Colombia, Costa Rica, Peru, and Romania, signed the OECD Council Recommendation on Artificial Intelligence.³⁶ The OECD Principles on AI set out five "value-based" principles and give accompanying recommendations for governments to ensure governments, organizations, and individuals can design and run AI systems in a way that puts the best interests of people first while at the same time ensuring accountability on the part of those who design and operate these systems. According to the OECD, these Principles represent "the first set of intergovernmental policy guidelines on Artificial Intelligence." The five principles can be summed up as follows:

³³ Available online at <https://www.un.org/en/content/digital-cooperation-roadmap/>

³⁴ Available at <http://www.oecd.org/going-digital/going-digital-shaping-policies-improving-lives-9789264312012-en.htm>

³⁵ See the full framework at <http://www.oecd.org/going-digital/framework/>

³⁶ Available at <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>

1. Inclusive growth, sustainable development, and well-being;
2. Human-centred values and fairness;
3. Transparency and explainability;
4. Robustness, security and safety; and
5. Accountability.

The five accompanying recommendations are that governments:

1. Invest in AI research and development;
2. Foster a digital ecosystem for AI;
3. Shape an enabling policy environment for AI;
4. Build human capacity and prepare for labour market transformation; and
5. Engage in international cooperation towards trustworthy AI.

Although the Principles on AI are not binding, previous such recommendations adopted by the OECD in areas such as privacy regulation and corporate governance have proven very influential in setting international standards and guiding the formulation of domestic regulation, even in countries that are not OECD members, and this is likely to be the case here too.

Negotiating new rules on electronic commerce at the WTO

Although negotiations were not launched at the 11th WTO Ministerial in Buenos Aires, in January 2019, some seventy-five WTO Members met during the World Economic Forum annual meeting in Davos, Switzerland, to formally launch negotiations for a WTO agreement on electronic commerce. The negotiations were and are premised on the understanding that they would remain open to all WTO Members who wished to participate but would not be subject to the Single Undertaking. The seventy-five countries - which have now grown to 86³⁷ - participating in these talks represent a broad cross-section of the WTO Membership.

The diversity of participating Members ensures

that these talks will require more time to reach an agreement, but it also means that the outcome will be balanced and thus benefit from a large degree of inherent legitimacy. Another important benefit of this diversity of Members is that this agreement intends to be on an MFN basis³⁸. Each Member comes to these talks with their own interests and sensitivities. For the EU, a key issue is the need to ensure that the agreement both does not conflict with the concept of privacy as a fundamental human right in European law and does not negatively impact the EU policy space in a way that would prevent further rights-based approaches to the evolution of its legal framework. For the US, its interests are mostly offensive since it is home to a majority of leading exporting digital services companies. For China, its interests are more narrowly focused on cross-border electronic commerce as a means of facilitating trade in goods where it has strong domestic incumbents hungry for international market access. However, its bargaining position is constrained by its own unique approach to information security and Internet sovereignty.

For many of the developing countries participating in these talks, the main opportunities lie in securing both market access for their own burgeoning internet firms but also commitments from advanced industrialized countries to support them in overcoming supply-side and infrastructure constraints that have so far hampered their fuller participation in the global digital economy. One key common issue raised by developing countries is the call for the agreement to include provisions that would help narrow the digital divide in developing countries.

While the agreement covers a very broad front from data flows to payments to electronic transactions fundamental to goods trade that is beyond the scope of this paper, at the heart of the agreement is a trio of issues that are seen as interdependent and linked:

- » Obligations to, by default, allow the international transfer of data, including personal information;

³⁷ At the time of writing they are: Albania; Argentina; Australia; Austria; Bahrain, Kingdom of; Belgium; Benin; Brazil; Brunei Darussalam; Bulgaria; Burkina Faso; Cameroon; Canada; Chile; China; Colombia; Costa Rica; Côte d'Ivoire; Croatia; Cyprus; Czech Republic; Denmark; Ecuador; El Salvador; Estonia; Finland; France; Georgia; Germany; Greece; Guatemala; Honduras; Hong Kong, China; Hungary; Iceland; Indonesia; Ireland; Israel; Italy; Japan; Kazakhstan; Kenya; Korea, Republic of; Kuwait, the State of; Lao People's Democratic Republic; Latvia; Liechtenstein; Lithuania; Luxembourg; Malaysia; Malta; Mexico; Moldova, Republic of; Mongolia; Montenegro; Myanmar; Netherlands; New Zealand; Nicaragua; Nigeria; North Macedonia; Norway; Panama; Paraguay; Peru; Philippines; Poland; Portugal; Qatar; Romania; Russian Federation; Saudi Arabia, Kingdom of; Singapore; Slovak Republic; Slovenia; Spain; Sweden; Switzerland; Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu; Thailand; Turkey; Ukraine; United Arab Emirates; United Kingdom; United States; and Uruguay.

³⁸ In other words, the benefits of the agreement will automatically be available even to countries which are not formally parties to it.

- » Obligations not to require the hosting of computing facilities or data in a Member's territory as a condition of access to trade in that market; and
- » Obligations for all Parties to the agreement to have a data protection/privacy regime in law, based upon internationally recognised principles as best practice.

Of course, the most difficult points to agree on will be the important caveats required to preserve policy space in key areas.

Two further key issues for many participating Members — and industry globally — are:

- » That the current Moratorium on Customs Duties on Electronic Transmissions³⁹, which is currently renewed at each WTO Ministerial, be made permanent; and
- » That all parties to the agreement should also become party to the Information Technology Agreement (ITA) of 1996, and its more recent 2015 expansion (ITA2).⁴⁰

Huawei is active along with many other stakeholders in global industry following these negotiations and supporting efforts to socialise to negotiators the importance of key issues, like those outlined in this paper, for inclusion in the JSI. Amongst other avenues are the Digital Trade Network⁴¹, and the efforts of the International Chamber of Commerce and its national chapters, particularly ICC United Kingdom.

This agreement represents an opportunity for creating a new global norm across fundamentally important elements of the digital economy and the rules that

underpin it. So far, only one question has not been deeply explored — what can trade rules do to reduce the digital divide.

The digital divide and trade rules

Huawei believes this agreement presents an outstanding opportunity to narrow the digital divide — especially in developing countries. On average, the price of 1 GB of monthly Internet service is more than 10% of gross national income per capita in Least Developed Countries, ten times higher than in developed economies. The price is even higher in landlocked developing countries (LLDCs).⁴² At a seminar for the JSI negotiators, the Digital Trade Network explored this subject with experts from the ITU, the WTO legal field, and negotiators and regulators.⁴³

It has long been understood that affordable, meaningful connectivity is a crucial first step for engaging in digital

³⁹ A full discussion on this subject is beyond the scope of this paper but an excellent overview may be found in Andrenelli, A. and J. López González (2019), "Electronic transmissions and international trade - shedding new light on the moratorium debate", OECD Trade Policy Papers, No. 233, OECD Publishing, Paris, <https://doi.org/10.1787/57b50a4b-en>

⁴⁰ For more on both agreements see https://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm

⁴¹ See www.digitaltrade.network for further information

⁴² See Alliance for Affordable Internet (A4Ai), "2020 Affordability Report, December 2020, at <https://a4ai.org/affordability-report/>

⁴³ The video recording of the presentations may be viewed at <https://youtu.be/OYqctMcMGs>



trade and reaping the benefits from digitalization. Universal digital connectivity is fundamental to achieve the UN's Sustainable Development Goals and improve people's lives. The need to close the divide has been reaffirmed at the global level, in the SDGs themselves, as well as in many decisions made by regional and national policy fora. The COVID-19 crisis and the positive impact that connectivity has had in maintaining commerce operations has made it even more apparent that connectivity is a critical need and gives further impetus to the digital economy.

Although 93% of the global population is within reach of a 3G connection, access to the internet is only affordable for slightly more than half of the global population. This is particularly true in developing countries and for women, youth, SMEs. ICT policies, particularly trade rules, can impact the cost of connectivity and contribute to bridging the digital divide. The development of such rules requires an inclusive dialogue between telecommunication experts, trade negotiators, the private sector, and civil society, amongst others.

WTO rules on telecommunications (domestic regulation, national treatment, the annex on telecommunications, and the telecom reference paper) have a constructive role to play, especially where specific commitments are taken in key sectors. Given that broadband costs are driven by national and international connections and regulatory choices, reducing total costs needs cooperation.

While the JSI participants have mentioned the importance of provisions in the agreement that help reduce the digital divide, as of this paper's writing, there have not been any proposals made to address this in specific.

Preferential liberalization

As discussed above, there have been positive outcomes from trade-liberalization since the first edition of our Digital Trade White Paper. Several initiatives have flourished outside of the WTO framework, such as the CPTPP, which was still agreed upon and brought into force despite the Trump administration's withdrawal from negotiations. We discussed the TPP in our 2017 White Paper. The same is true of the RCEP, another



mega-regional FTA amongst the 10 ASEAN Member States of and the six nations that have already concluded an FTA with the trading block.

In addition to the CPTPP and RCEP, a number of new and relevant agreements have been reached since 2017, including the updated NAFTA, otherwise known as USMCA (US, Mexico, Canada Agreement), and the EU-Mexico FTA. Neither of these agreements have yet entered into force. The EU-Mexico FTA is scheduled to do so quite quickly, and the USMCA has yet to be ratified by both Houses of US Congress. Ratification may not happen until early 2021.

The EU-Mexico FTA makes permanent the WTO moratorium on customs duties on electronic transmissions (Article 1 of the Digital Trade chapter) but explicitly states that this commitment does not affect the parties' ability to impose internal taxes, fees, or other charges on electronic transmissions.⁴⁴ The Digital Trade chapter also contains provisions that seek to place limits on the parties' ability to require the mandatory disclosure of source code,⁴⁵ albeit with

⁴⁴ Article 1(2) of the Digital Trade chapter

⁴⁵ Article 9

carve-outs for legitimate public policy objectives, which explicitly include certification procedures and prudential reasons. Compared to the corresponding provision in the CPTPP, the carve-outs for this obligation are significantly broader and deeper. Article 10 is entitled "Open Internet Access" and postulates a number of principles, such as the freedom to access, distribute, and use services and applications available on the internet, as well as the principle of technological neutrality. However, this article is also subject to several limitations, as it is formulated in "best endeavour" language and is also subject to "applicable policies, laws and regulations" (presumably irrespective of whether they conform to the provisions set out in the EU-Mexico FTA). The draft of the Agreement made available to the public is still incomplete and contains a place-holder for an eventual provision on data flows. At the time of this paper's writing, it seems that there is also no language prohibiting data localization. The Digital Trade Chapter of the EU-Mexico FTA is clearly still a work in progress, which is not surprising given the far-reaching changes ushered into the EU data privacy regime by the General Data Protection Regulation (GDPR) in 2018, as the EU-Mexico FTA was being negotiated.

The USMCA's Digital Trade chapter contains a relatively more ambitious set of provisions when compared with the outcomes achieved in the CPTPP. Whereas it resembles the CPTPP strongly in the areas of banning customs duties on electronic transmissions, the general and binding non-discrimination obligation regarding "digital products," and the provisions to secure the free flow of information, it differs somewhat in the area of forced data localization, since it does not include the public policy exceptions that accompany this principle in the CPTPP.

The USMCA provision on mandatory disclosure of source code also goes further than the CPTPP since it does not include the substantive scope of application limitations that CPTPP allows, which only apply to "mass-market software" and explicitly exclude "software used for critical infrastructure." In contrast, the USMCA provision explicitly applies to both source code and algorithms, and the only exception to the ban on mandatory disclosure that the USMCA permits is where it is required by a "regulatory body or judicial authority" in the context of a "specific investigation,

inspection, examination, enforcement action, or judicial proceeding."⁴⁶

Apart from these provisions, the Digital Trade Chapter of the USMCA sticks to the script laid down by the CPTPP regarding provisions that do not seek to constrain governments' regulatory autonomy but rather promote cooperation or common approaches to facilitating electronic commerce or digital trade. These provisions include those on domestic electronic transactions frameworks, electronic authentication and electronic signatures, online consumer protection, the protection of personal information, paperless trading, and spam.

USMCA provides an interesting look into the US business sector's demands and what market access and freedom of action concerns they are trying to use FTAs to address. That, in turn, gives some insights into the tensions that will inevitably play out in the WTO e-commerce negotiations, including:

1. Whether the WTO moratorium on customs duties on electronic transmissions can be made permanent at the global level;
2. Whether the free flow of data as a principle can be agreed upon and, if so, with what exceptions;
3. Whether forced data localization will be subject to an in-principle ban, and if so, what carve-outs it would be subject to above and beyond those already contained in the GATT General Exceptions clause (Art. IXX); and
4. Whether disciplines governing mandatory source code disclosure can be agreed upon, and to what scope and with what exceptions.

The WTO Information Technology Agreement (ITA), originally signed in 1996, has been one of the underpinnings of the growth the digital economy has seen over the last two decades, with the original list of 29 signatories growing to 82, thereby effectively covering a reported 97 percent of world trade in information technology products. The ITA's scope extended to a broad range of high-tech goods, including computers, telecommunications hardware, semiconductors, software, scientific instruments, and high-tech manufacturing and testing equipment, as well as parts and components for all of these products. Despite such broad coverage, after a decade and a

⁴⁶ Paragraph 2 of Article 19.16 of the USMCA

half, the ITA had become somewhat outdated in terms of product coverage following the rapid technological advancements made over the same period.

In May 2012, as the Agreement turned 15 years old, product expansion negotiations were launched. We at Huawei recognized the importance of the negotiations to expand the "ITA" to our bottom line, to the global industry as a whole, and ultimately to the benefit of consumers through reduced prices on ICT hardware products. Working together with our partners in the private and public sectors, both within China but also in the other countries involved in the negotiations where we are present, we supported the process of formulating offers and requests and ultimately were a part of the success in the expansion. In fact, some

34 of our own products (which are also manufactured by many other firms like ours) are included in the list of 201 new ICT products that will qualify for duty-free market access in the fifty-four WTO members that ultimately signed the new agreement in December 2015. According to the WTO, "annual trade in these 201 products is valued at over US\$1.3 trillion per year, and accounts for approximately 7% of total global trade today." This was thus a significant win for the global ICT industry as well as consumers of these products worldwide.

The next section of this paper discusses some new imperatives as we approach the next era of the digital economy, namely one shaped by the roll-out of 5G and continued adoption of AI and RI technologies.



Part III: New Imperatives for the decade ahead

Reasserting the need for continued economic integration

Decoupling is unaffordable

The rise in US-China trade tensions has led to threats of decoupling from China both technologically and economically. However, the global trade community, recognizing how much the world has to gain from trade, globalisation, and interdependence, have been vocal in disagreeing with this notion. In the wake of COVID-19's economic devastation, can the world afford to pursue forced decoupling? The costs of such a policy are highlighted in a new landmark report just released by the Economist Intelligence Unit on the "Costs of Deglobalising World Trade."⁴⁷ The report points out the very high economic and social costs of

de-globalisation in three specific scenarios over this decade: decoupling from China, a shift toward self-sufficiency, and COVID-19 disruption to global trade. These scenarios encapsulate distinct trends persisting through 2020. This analysis is based on independent research applying the World's No. 1 computable equilibrium model from the Global Trade Analysis Project Consortium (GTAP), and its key findings are triggering serious reflection on the right path forward. The modelled results from an aggressive decoupling scenario are clear: the impact on the global economy would be highly disruptive, and it would take the better part of a decade for supply chains to find a new equilibrium. Even by 2030, all but a handful of countries would still be worse off.

Technology supply chains tend to be sticky, especially

⁴⁷ Economist Intelligence Unit: "Costs of Deglobalising World Trade"

in areas like ICT manufacturing, the largest component of US-China trade, where scale and cluster effects matter. Plant investment decisions are also typically made with long time horizons. As the report points out, observers should not be lulled into a false sense of security by the apparent resilience of trade flows. A large portion of China's exports to the US is accounted for by overseas multinationals, and foreign direct investment in China by Western companies has slowed. Once a few large companies start to move, there is a risk that an uncontrollable domino effect might follow.

Unquestionably, a trade rift between China, the US, and its allies would create a significant drag on global economic growth over the next decade at a time when concerns are focused on economic recovery from COVID-19. The stakes in this scenario are high due to the sheer volume of trade that exists between the world's two largest economies. The cumulative forecasted loss to global GDP relative to the baseline from 2021 to 2030 amounts to US\$52.8 trillion in 2020 prices. That is the equivalent of losing an economy the size of Japan every year for the next decade.

On top of this, the economic damage would reverberate across the whole global economy, impacting every economy, not just those of the US and China. Five Eyes countries with high export dependence on China (Australia and Canada) stand to bear the next greatest losses. Even non-parties to the ongoing trade confrontation, including South Korea and Germany, would sustain collateral damage from the disruption to global demand and supply chains.

In its position paper on relations between Germany and China, the Bundesverband der Deutschen Industrie (Federation of German Industries; "BDI") affirmed that any kind of economic decoupling between the West and China was "not an option". In some important ways, economic integration between the US and China has slowed markedly. Starting in 2017, outbound Chinese investment to the US dropped precipitously.⁴⁸ In addition to this, complex supply chains that American companies spent decades developing in China are now being re-designed to avoid the disruptive effects of punitive tariffs placed on many Chinese imports into the US by the Trump administration.



Taken together, this is a very worrying trend, as many voices throughout the world in business and politics have made clear. In early 2020, the World Economic Forum put it very succinctly when it said, "The trade dispute between the US and China threatens to sever the ties that hold the global economy together."⁴⁹ The IMF has also attributed the slowdown in global growth to the US-China trade war.

To be sure, other factors are also influencing these trends, such as the domestic restrictions placed on outbound investment from China in 2017 and rising labour costs in China that had already started to nudge production to lower-cost countries in the region. However, the trade tensions have undoubtedly exacerbated friction and risk, creating a form of negative feedback loop and building divisions between the world's two largest economies.

The rationale behind economic integration is not purely economic, as scholars of the history of European integration fully understand. Although the theory of comparative advantage provides much of

⁴⁸ While many have commented about this fact a good recent overview can be found in Hale, T., "China-US investment falls to lowest in almost a decade," 16th September 2020, Financial Times, at <https://www.ft.com/content/458af94f-d152-47bf-8909-737f3ccce700>

⁴⁹ World Economic Forum, 2020, "What can companies do to de-escalate the US-China trade war?" at <https://www.weforum.org/agenda/2020/01/companies-deescalate-us-china-trade-war/>

the intellectual underpinnings for progressive trade liberalization, there are other important reasons for countries to trade with one another and for their economies to become more intricately intertwined. One profoundly important reason is the significant minimization of the risk of armed conflict through mutual interdependence and the increase of commercial, cultural and person-to-person links that drive the alignment of countries' interests.

This was the core idea behind merging the coal and steel industries of France and Germany after the devastating conflict of World War II, which in turn was the genesis of the political and economic project that has evolved into the modern-day European Union. The idea, today, that Germany and France might wage war against one another seems preposterous, but before 1945, this is precisely what had happened no less than three times within the span of 70 years. The US and China now stand at a pivotal moment in their relations with one another and the interests of the entire global economy and all the people of the world are ultimately at stake. We must choose collaboration over confrontation, despite how difficult this may be. The World's great economic powers all share a special responsibility to collaborate in the interests of predictable economic and political relations. It is in no country's interests to relearn the lessons that led to the great conflicts of the early 20th century less than a century later.

Coming to grips with a multi-polar world

After the fall of the Soviet Union in 1989, the US stood alone as both the only remaining military superpower and by far the World's largest economy. Its approach to political and economic governance (privatization and deregulation) stood essentially unchallenged. This has changed due to a confluence of factors, including the 2008 Global Financial Crisis. The rise of China and the rise of the global trading system resulted in economic progress on many global fronts. Former French President Nicolas Sarkozy explicitly questioned the blind faith so many had put in the unchecked reign of the free market, saying, "Self-regulation to resolve all problems, that's over. "'Laissez-faire', that's over. The all-powerful market that's always right, that's over." No longer is free-market capitalism, the embodiment

of the so-called Washington Consensus, accepted by policymakers without question. The 2008 GFC and the massive lengths policymakers all over the world had to go to in order to rescue their economies from bankruptcy undoubtedly caused a shift away from unquestioned deference to US leadership — and in capitalism as it has been operating.

In 2010, China also overtook Japan as the world's second largest economy, a position which Japan had held for 42 years. The year before, China became the world leader in the number of global patent filings (although admittedly many of these were of questionable intrinsic value). In 2014, according to the IMF's calculations, China's economy actually overtook the US economy in GDP on a purchasing power parity basis. Although it is undeniable that as China's economy has matured, its real annual GDP growth has slowed markedly, from 14.2% in 2007 to 6.6% in 2018. In fact, the slowdown in China's GDP growth, and the fact that on a GDP per capita basis it still lags significantly behind other one-time developing countries that preceded its growth path such as Japan and Korea, has given rise to concerns that China runs the very real risk of getting old before it gets rich given its demographic structure. Be that as it may, it is undeniable that China's model of economic governance has proven incredibly successful, with the World Bank characterizing China's growth as "the fastest sustained expansion by a major economy in history."

China's position today means we now find ourselves in a multi-polar world, with several large economies, including the US, China, the EU and Japan, each exercising or contesting leadership in different areas. However there is no reason this competition needs to be detrimental, in fact quite the opposite. The multi-polar world we now live in could herald the dawn of a new age characterized by mutually beneficial "coopetition" and a healthy contest of ideas. To get there, we must set aside any notion that the quest for leadership is a zero-sum game, and that all economic powers need to be operating from the same foundational premises. Given that the US and China are the two countries which have benefited the most from the global trading system,⁵⁰ the WTO can play a very important role in managing a world of different

⁵⁰ See Prof. Gabriel Felbermayr, PhD; Prof. Dr. Mario Larch; Prof. Yoto V. Yotov, PhD; Prof. Dr. Erdal Yalcin, 2019, "The World Trade Organization at 25: Assessing the Economic Value of the Rules Based Global Trading System," Bertelsmann Foundation, at <https://www.bertelsmann-stiftung.de/de/publikationen/publikation/did/the-world-trade-organization-at-25/>

but not mutually exclusive approaches to economic governance. It can only do that to the extent its leading economies collaborate in the interests of all to produce a positive result.

Restoring the WTO's central position in trade

The WTO has enjoyed some noteworthy successes as well as setbacks since its creation in 1994. The most notable setback would have to be the failure to successfully conclude the Doha Round of trade negotiations, despite many years spent trying. However, the WTO's setbacks are far outweighed by its many successes, which include a sizeable increase in membership, from the 128 GATT Contracting Parties that became original WTO Members to the some 164 Members at the time of writing. This increase in membership has brought about considerable trade liberalization, with the high point of this accession-driven market opening arguably being in 2001, when China acceded to the WTO — which greatly accelerated its economic development as previously noted. In addition to this, other noteworthy successes of the WTO include the conclusion of the so-called overtime negotiations in financial services and telecoms in 1997, as well as the 1997 Information Technology Agreement (ITA), the ITA expansion in 2015, and the conclusion of the Trade Facilitation Agreement at the 9th Ministerial Conference in Bali in 2013, with this agreement entering into force in 2017.

The WTO has been affected by the rise in trade tensions discussed above. First of all, the tit-for-tat tariffs that the US and China have imposed on each other are also the subject of dispute settlement cases currently being adjudicated before the WTO. In addition, the WTO's General Council has seen a number of notable showdowns and heated debates over the last 12 months between the representatives of the US, China, and other WTO Members. Efforts at WTO reform in important areas of work where the current set of rules are in serious need of updating are being hampered by ideological standoffs and power posturing, when what is really required is constructive engagement and leadership based upon 'enlightened self-interest'. Nowhere is this more obvious than in the context of appointing new members to the WTO Appellate Body and the WTO reform process of which this dispute is a part. Here, the United States stands largely isolated, since the Trump administration has put forward a set of primarily technical grievances with the way appellate

reviews function, but has declined to engage with the many proposals for resolving these issues that other Members have put forward beyond rejecting them. The WTO Appellate Body has become inactive. This is a serious problem for the organization and its 164 Members, since many view the WTO dispute settlement system and the Appellate Body as the "jewel in the crown" of the entire rules-based multilateral trading system.

For the WTO to stay relevant, Members need to come together and reform the organization's functions in areas where rules have failed to keep pace with the economic realities of the world as it stands today. The incoming Biden administration has a great opportunity to do exactly that. This includes negotiating new rules on electronic commerce (discussed above), restoring the Appellate Body so it may effectively carry out the mandate it was created to execute, and tightening existing rules in areas such as the subsidy notifications. There is also scope to negotiate new rules on investment facilitation, and to broaden the substantive scope of the ITA to include not just the elimination of tariffs but also minimizing the trade restrictive impact of non-tariff barriers. Simply put, there is a lot of work to do, and Members need to come together in a spirit of open collaboration to achieve consensus-based, negotiated outcomes that will serve the interests of the entire WTO membership.

Informing the globalisation debate; resisting populism and easy solutions

Effective solutions to inequality

Income inequality has steadily been rising in recent decades because of a failure to enact policies that fairly distribute gains from globalisation. When this first became an issue is debatable, but there was little question of its existence by the time the world was struggling to get back on its feet following the subprime mortgage crisis, the GFC in 2008 and 2009, and the European sovereign debt crisis which peaked between 2010 and 2012. In the US, what has come to be known as the Great Recession lasted from December 2007 until June 2009. Real (inflation-adjusted) GDP did not return to its pre-crisis peak until the third quarter of 2011. In fact, for the US, the Great Recession represented the largest loss of wealth in the fifty years since the federal government started collecting data on wealth accumulation. In Europe, because of austerity measures, the recovery took even



longer and is argued to have had far-reaching political implications for sitting governments in ten out of nineteen Eurozone countries as well as being a major contributing factor to Brexit.

Although economists agree that inequality is a serious issue, there is less consensus about what the right approach to tackling this problem is. Economists at the OECD have outlined a number of approaches that economic data suggests would go a significant way to addressing growing inequality. These include improving access to and performance in education and training at every level, combined with policies to make quality health care more affordable. The OECD has found that public spending on high-quality education, health care, and family care reduces inequality by an average of 20%. One thing is key: digitisation is positively correlated with labour productivity, and both correlate to higher wages for workers. This is an important factor to consider when looking at poverty reduction and job creation methods and policies aimed at the large and growing numbers of younger workers entering the workforce, especially in an era when automation of production will increasingly impact employment. This is also very important when looking at reducing inequality.

Taxation and social welfare policies are another important avenue that can reduce inequality. Almost all mainstream economists are in favour of progressive

taxation, with the wealthy having to pay more than everyone else. Cuts in benefits, narrowing eligibility, and tax reforms that allow the wealthy to pay less than their fair share are all inimical to the vitality of the middle class.

The backlash that we have seen against globalization and the retreat into beggar-thy-neighbour protectionism is not the solution to growing inequality, even if it has been politically expedient for some leaders in the short term. Leaders need to stand up to those who call for a roll-back of the international economic cooperation and integration that has brought so many benefits to the world as a whole — and set the record straight about the net gains in living standards that globalised trade has brought.⁵¹ Leaders also need to get serious about helping those most starkly affected by globalization and technological disruption get themselves back into the workforce through policies such as re-skilling programs and unemployment benefits. Programs like these ensure trade policies achieve the best results as they allow the industries disrupted by trade agreements to find new opportunities created by those same agreements. Too often, this key part of the equation is not met. For too long, populist politicians have been allowed to own the narrative that globalization has been a predominantly disruptive force, when the truth is that globalization has been a massive boon to billions

⁵¹ For a good short overview of the interdependencies involved in capturing welfare gains for consumers from trade liberalisation see Nigai, S. "Welfare gains from trade: Measuring the "average consumer" isn't good enough," 2nd August 2017, LSE Business Review, at <https://blogs.lse.ac.uk/businessreview/2017/08/02/welfare-gains-from-trade-measuring-the-average-consumer-isnt-good-enough/>.

of people and a key policy input responsible for the largest reduction in absolute poverty in all recorded history over the last two centuries⁵².

Take just one example, Fuyao Glass, a Chinese company, that in 2014 took over an abandoned General Motors assembly plant in Moraine, Ohio, with an initial investment of US\$250 million. By the time the plant entered full-scale production in October 2016, the company had invested US\$1 billion. At the time of writing, Fuyao Glass employs some 2,300 people in Ohio, and is still expanding. This is what open trade and investment markets enable, and this is why trade and investment liberalization needs to be vigorously defended intellectually, economically, and politically.

Rethinking the role of the State in markets

The Global Financial Crisis caused policymakers and political leaders in many countries to rethink regulatory oversight as it had clearly failed in many countries.⁵³ The GFC was unequivocally a case of market failure on a massive and potentially cataclysmic scale due to lack of oversight. Today, the so-called "Washington Consensus" that saw the privatization, deregulation, and minimizing the role of the State has begun to be questioned, with a growing recognition that government has an important role to play in effectively regulating markets, investing in public infrastructure, and ensuring affordable access to education and medical services, among other priorities. Even in a bastion of free-market capitalism such as the United States, politicians on both the left and the right of the political spectrum are starting to advocate for more targeted government interventions into the economy to meet financing needs that are not being met by the private sector.

Trade tensions have also focused scrutiny on China's economic model, with allegations that it is dominated by state owned enterprises (SOEs), and that this is somehow incompatible with a free-market economy. Like in many generalisations suggesting a "black and

white" conclusion, reality holds more grey than black and white, given that the State plays a significant role in the corporate sectors of many economies, such as the banking sector in Germany, the energy sector in France, and across large swathes of the Singaporean economy.⁵⁴ Fannie Mae and Freddie Mac, the two largest mortgage lenders in the United States, are both SOEs. Sovereign Wealth Funds, some of the largest institutional investors in the world today, are owned by governments of all ideological bents, from both East and West. This debate has even affected Huawei who must constantly confront false claims that it is State owned despite being a wholly employee-owned private company (one of the largest such in China).

Instead of focusing on ownership, which in and of itself is not a decisive metric, the debate should focus on behaviour and economic outcomes. It should not matter who owns a firm or where it is headquartered if it creates value for customers, provide well-paying jobs and decent working conditions for their employees, pays taxes and otherwise contributes in a positive way



⁵² For a good discussion of this as well as the interdependencies between policy domains impacting poverty reduction globally see Ortiz-Espina E, "Historical poverty reductions: more than a story about 'free-market capitalism'," 29th September 2017, Our World in Data, at <https://ourworldindata.org/historical-poverty-reductions-more-than-a-story-about-free-market-capitalism>.

⁵³ While there are many sources of information about this, the results of the US governments' inquiry provides a comprehensive review: Financial Crisis Inquiry Commission, 2011, "The Financial Crisis Inquiry Report: Final Report Of The National Commission On The Causes Of The Financial And Economic Crisis In The United States," January 2011, at <https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf>.

⁵⁴ For a thoughtful overview of these questions see The Economist, 2020, "L'industrie, c'est eux: Europe is rediscovering its penchant for statist intervention," at <https://www.economist.com/europe/2020/01/16/europe-is-rediscovering-its-penchant-for-statist-intervention>.

to the communities and economies in which it is based, and operates within sectors which have low barriers to entry to new firms and innovators. Many countries have increasingly understood that digitalisation is the key to current and future national competitiveness. From Saudi Arabia to Norway to Thailand, there's an increasing focus in governments worldwide to capture the socioeconomic benefits of digitalisation.

This is unquestionably a good approach given that digitalisation, like all general purpose technologies, transforms social and economic life. That said, government interventions should not distort market outcomes or unfairly tilt the playing field in favour of domestic companies. This is equally true of government involvement in the corporate sector as it is in the context of fiscal incentives or government subsidies. The WTO already has rules in place that are designed to address market-distorting subsidization in both the agricultural and industrial sectors. Other multilateral initiatives such as the competitive neutrality guidance and associated principles advocated by the OECD offer an alternative methodology for assessing and redressing any government interventions in the corporate sector that unfairly cause harm to competing interests.⁵⁵ We need to abandon ideological prescriptions in favour of an evidence-based approach that objectively determines what the best role for the government is in the economy and how firms should conduct themselves vis-à-vis their governments, their competitors, and the markets they participate in.

The question of digital taxes offers an interesting case study in how we can distribute the gains from digitalisation more equitably. International e-commerce giants (such as the US's Amazon and India's Flipkart) are facing renewed demands to pay local taxes on their operations around the globe. Digital taxes are seen by many governments as part of the solution to the inequality this creates. In 2021, global e-commerce giants will face the prospect of a renewed crackdown in this area, as governments try to support domestic players or rescue bricks-and-mortar shops and outlets. India, Indonesia, Singapore, and Malaysia have already launched digital service taxes. The EU has plans to roll out its own digital tax regulations if the OECD fails to address the issue as it was identified in the OECD project on Base Erosion and Profit Shifting

(BEPS). Some wealthy economies are holding back to achieving a consensus before taking action. Some governments, such as the UK, will consider a levy on all online retailers to level the playing field. These issues will loom large in 2021.

Another area for governments to collaborate on is how to regulate technology companies that are expanding into traditionally highly regulated sectors, such as finance, healthcare, and education, but have no desire to be regulated like current players are.⁵⁶ The recent case of Ant Financial in China, although described as a crackdown, actually provides a fascinating insight into the pressing issues economies and societies are facing in maintaining economic and social stability in light of the expansion of new digital companies into new digital areas and the potentially higher risks this disintermediation brings to the overall economy.

Protecting workers not jobs

It is clear that over the next five to ten years, technology is going to have a dramatic impact on working life and thus the economic livelihoods of millions, if not billions of people all over the world. In reality, the benefits that these technologies bring are going to make the world a better, safer, cleaner, more comfortable, and more intellectually rewarding place to live in the medium to long term. What will be difficult for workers, their families, and governments will be the short-term disruption these changes bring in whole sectors of economic activity. Robots, AI, telecommuting freelancers (Remote Intelligence), and other technologies are going to replace many jobs. This is inevitable and is a trend that has already started, albeit slowly and for the large part still imperceptibly to many. We know that many jobs will cease to exist. We also know that many new jobs in areas that don't currently exist will be created'.

The onus on policymakers is not to try and preserve existing jobs or even existing sectors, but rather to protect the people that used to occupy them and ensure they have educational and social welfare supports to make the transition to new opportunities of their choosing. This involves ensuring economic security to displaced workers and supporting the training and education infrastructure they will need in order to pivot towards new areas of economic activity.

⁵⁵ For more information on the OECD's work in this area see <https://www.oecd.org/competition/achievingcompetitivenetrality.htm>.

⁵⁶ Digital disruption: risks and opportunities in the shift to online. December 2020. Report by The Economist Intelligence Unit

This reinforces some of the arguments made above when discussing inequality. Governments and people both have a responsibility to prepare for this transition, which will be upon us sooner than we imagine. But it would be wrong to prepare for this transition with a sense of dread. Machines and humans will remain complementary to one another, with developments such as automation and big data analytics actually serving to either liberate humans from backbreaking or repetitive tasks or empowering humans to exploit those skillsets that cannot be replicated by machines or software. After all, we have been here before: when major technologies transformed society during the Industrial Revolution, whole sectors and industries ceased to exist — but many more were created. The challenge we have now is to learn these lessons from history and not repeat previous mistakes.

The same is true of the effects of the trade and investment liberalization that underlies globalization. Free trade increases competition and is inherently redistributive in its effects, meaning it creates both winners and losers. The winners take care of themselves. For them, globalization is all upside and very little downside (the only downside being maybe exposure to more international competition). The losers see globalization and the increased competitive pressures it brings as all downside and very little upside (the only upside being a larger selection of more affordable goods and services that they can't afford to buy anyway).

Governments have done a mixed job of helping people adjust to the disruptive effects of globalization. In the US, what is known as Trade Adjustment Assistance is a policy failure that both sides of the political spectrum disavow themselves of. In other countries such as

Denmark or Chile, adjustment assistance has had more of a positive impact. Governments need to get a lot better at designing and implementing policies that protect workers and help them adjust, otherwise the political upheavals we have seen over the last few years may get worse. Waiting is not an option: transformation is already upon us. The societies that will truly succeed and prove to be economically and socially sustainable are likely not those who enjoy first mover advantages in specific technologies, but rather those who are both the first and the most consistent movers who are innovative in how they approach the transformation technologies bring upon their workforce.

Principles to guide us through the current storm

We should re-commit to a more inclusive model of globalization

Globalisation is painful and efficient; de-globalisation is painful and inefficient. We need to recommit to trade and investment liberalization, international economic integration, and a model of globalization where benefits can be shared inclusively. Globalisation creates both winners and losers. We need to recommit to a model of globalization through a combination of policy drivers that also results in new opportunities for those employed in sectors that technology and trade liberalisation negatively impacts in the short term, allowing those who are negatively impacted to regroup, retrain, and re-engage. The policies needed to ensure these outcomes are not new or unknown. We need our leaders to ensure that we don't make the same mistakes that have been made in the past as the pace of technological change accelerates.



We should find a new balance to share the value of data equitably

We need to start a conversation about the true value of personal data, how this value can be shared more equitably, and how the individual can be at the centre of decision-making about the information related to them. One of the reasons the internet economy and all of its functionality was so readily and enthusiastically embraced was because it provided so many services and benefits without cost at the point of use. Today we know that while users didn't pay in money, the benefits that firms enjoy from aggregating users' information far exceeds the cost of providing the services they offered.

It will not be politically or socially sustainable, even in the medium term, for the current status quo to continue. We need to rethink this paradigm in a way that gives users more control over the data they share, and lets them capture more of the value they generate, without reducing the ability of firms to innovate so much that both users and the economy suffer.

The private and public sector must partner for the common good

We need to re-evaluate the interconnected and interdependent roles of the public and private sectors and focus on how they can better work together to make achievement of win-win outcomes that benefit society and communities their primary outcome, rather than a side benefit. We need to move beyond conventional State thinking that the private sector is simply an object of regulatory oversight and tax revenue.

One element of this is the need to overcome the private sector's view of the government as something to be avoided. These two actors need to partner more effectively, collaborate more closely, and play to their individual strengths, whilst better involving the public and non-governmental sector in decisions that impact them. We also need to be honest about the fact that, without government, there is no market, and without markets, there is little for governments to regulate or tax. There is an inherently symbiotic relationship between the two that needs to be recognized, better understood, and more intelligently utilized to produce better societies, economies, and communities.

We should recognize multi-polarity as the basis of collaboration, not conflict

We have to embrace the reality of a multi-polar world based on mutual respect and reasonable reciprocity in international economic relations. The days when one or even two hegemonies towered over all other nations is over — and we should all be glad this is true, as diversity in human society is the key to our dynamism and success. Today we live in a world with different power centres, including the US, China, the EU, and Japan. We need collaborative leadership to tackle the most serious issues of our time. All countries need to cooperate with one another in a spirit of pragmatic problem-solving on the basis of mutual respect and an appropriate degree of reciprocity, aligned with countries' different levels of development and their varying economic, cultural, and political sensitivities.

Cybersecurity is a shared responsibility requiring collaborative effort

We must not forsake genuine security in the pursuit of short-term expediency. In a world of increasing connectivity, cybersecurity is rapidly emerging as one of the major threat contingencies governments, companies, organizations, and people need to be attuned to. This is a burden we must all bear in our own respective ways. We must also realize that while the risks inherent to cybersecurity threats can never be completely eliminated, they can be effectively minimized. Radical and prescriptive solutions have not proven themselves. The approaches that have the greatest chance of achieving network security are those that are risk-based ones that seek to reduce vulnerabilities across the entire spectrum of the user-processor-controller ecosystem and that are based on a track-record of success and recognized best practices. Nationality-based bans that target one or several vendors or providers do nothing to enhance the integrity of networks, the protection of data, or the security of users.

This is not a small problem, and it is emblematic of the kind of all-society cooperation we need. Damage related to cybercrime is estimated to reach US\$6 trillion annually by the end of 2021.⁵⁷ Even the most comprehensive single national approach to cyber trust will fail if other countries fail to address the causes of such attacks or fail to implement those policy choices

⁵⁷ Cybersecurity Ventures (2020), *Cybercrime Report*, at <https://cybersecurityventures.com/annual-cybercrime-report-2019-to-2020/>.

and sanctions necessary to prevent attacks irrespective of their source.

When it comes to cybersecurity and trade, some countries are clearly using cybersecurity as a non-tariff barrier to trade. Trust in cyber security should be based on facts. Facts must be verifiable and verification must be based on standards. Unified security standards will help ensure that all network elements and services can reach the same levels of security. Meanwhile collaboration on cybersecurity can enhance trust among countries, governments, and organizations, and as mentioned, can eliminate wasteful costs.

Looking towards the future

Low-Hanging Fruit and Quick Wins

A number of policy areas important to the smooth functioning of the digital economy already enjoy broad-based consensus, with the only real differences between countries being the degree to which they have already succeeded in implementing facilitative legislative frameworks.

Among the rules discussed in the previous section, this category encompasses such issues as:

1. Permanent moratoriums on customs duties for electronically transmitted products;
2. Rules on electronic authentication and electronic signatures;
3. Online consumer protections;
4. Unsolicited commercial electronic messages (spam);
5. Paperless trading; and
6. Increasing cooperation in the areas of transparency, open access to Internet services, and cybersecurity.

These so-called "Tier 1 Disciplines" demonstrate that there is already much on which the vast majority of industry stakeholders agree. Another issue that enjoys widespread consensus is the principle of non-discrimination, meaning that goods and services in the digital economy should be subject to the same regulatory treatment irrespective of their origin or the nationality of their service provider. The principle of non-discrimination is one of the most fundamental underpinnings of a multilateral trading system. It is inconceivable and wholly undesirable that this principle should not apply equally online and offline.

The various rulemaking initiatives for the digital

economy discussed earlier include binding language on this principle. In many ways it has already achieved this status, since most trade in ICT products is subject to GATT rules and thus the relevant provisions on Most Favoured Nation and National Treatment principles. Digitally traded services also enjoy the protections afforded by the WTO's General Agreement on Trade in Services (though coverage there is a patchwork based upon individual choices of WTO Members on a sector-by-sector basis).

Other principles being advocated in fora like the OECD and APEC also enjoy broad consensus, although countries take different approaches in how they interpret the scope of these principles as well as the extent to which they limit their application on various public policy and national security grounds. These principles include:

- » Keeping the internet open, accessible, truly global, decentralized, and dynamic;
- » Promoting and enabling the cross border delivery of services;
- » Encouraging multi-stakeholder cooperation in the development of policies and standards;
- » Limiting internet intermediary liability for the actions taken by platform users;
- » Ensuring a healthy competitive market environment for goods and services in the digital economy; and
- » Promoting investment and competition in the development and operation of high-speed networks.

As a globally active ICT company that provides goods and services at multiple points along a diverse range of digital value chains, Huawei supports these principles and advocates in favour of their adoption at all levels and by all countries. A robust and well-functioning digital economy that distributes market power evenly between providers and users is one we believe will continue to foster technological progress and innovation and will continue to be a driver of economic growth and wealth creation with net welfare-enhancing socio-economic benefits for all. We will continue to work with our industry partners, with our public-sector stakeholders, and with our customers to promote of these principles.

Policy Areas of Ongoing Contention

A narrow set of obligations are also emerging where different views have manifested themselves in different countries. These so-called "Tier 2 Disciplines" essentially embody differences in regulatory approaches and policy priorities.



The principle that data should be freely transferrable globally, often called "free flow of information", is generally recognized as desirable, but governments disagree with regard to the scope of this principle. Should it apply to all information or only information that is essential for conducting business? Even if the answer is the latter, is personal information also covered in that definition? It is also generally recognized that restrictions on the free flow of information should be allowed as long as they are justified on necessary and legitimate public policy grounds and not administered or applied in a way that is not proportional to the objective in question, or that would constitute a means of arbitrary or unjustifiable discrimination or for protectionist ends. At Huawei we are generally supportive of the principle of free flow of information and view it as an essential precondition for the proper functioning of the Internet. The symbiotic relationship between the infrastructure and devices that we manufacture and sell, and the data that flows over this infrastructure and originates or terminates on these devices (which we help our customers to store, process, understand and manage), relies upon information being able to flow freely between different actors, between different countries, and across different technologies and platforms. As a good global corporate citizen that always prioritizes compliance with all applicable laws and regulations, we equally

recognize the sovereign right of governments to make exceptions to this principle when the exceptions are justified on recognized and legitimate public policy grounds, when proposed actions are proportionate to the objective in question, when they do not constitute an arbitrary or unjustifiable act of discrimination or a disguised restriction on international trade, and when the exceptions are transparently implemented.

Another area of contention is an emerging consensus that it should not be a condition of access to a market that data or its processing must take place in that market — often referred to as data localization requirements or local hosting obligations. A number of major ICT markets and players in the digital economy like India, the EU, Indonesia, Brazil, South Korea, China, Russia, Vietnam, and Turkey have become enthusiastic adopters of data localization policies, particularly in the wake of the Edward Snowden revelations and the ensuing climate of mistrust these revelations have created. Certain interests in the EU have also made proposals for a "Schengen Cloud".

The global technology industry (particularly US internet companies) have rallied around creating an as binding and comprehensive a ban on data localization as possible. This has largely been achieved in the CPTPP and USMCA, but again subject to the same exceptions language discussed above in the context of the principle of the free flow of information. It follows that where there are forced data localization requirements, there will be distortions to cross-border data flows. The intensity that has surrounded this debate is understandable. It may seem that very large and populous markets like the EU, India, China, Brazil and Turkey could become self-sustaining, able to meet domestic demand on reliable and economical cloud computing infrastructure. Yet, as outlined above, these policies come at hefty societal and macroeconomic costs. How they measure against existing WTO rules remains largely untested.

Another area where broad consensus seems elusive is whether or not countries should be able to make companies provide access to source code as a condition of market access. Although a hard obligation with very limited exceptions had been agreed upon in the CPTPP and looks likely to feature in the outcome of the WTO e-commerce negotiations, some governments are in favour of making these demands of companies that operate in their markets and are likely to resist attempts to limit their regulatory autonomy in this regard



through an international trade agreement. For Huawei, we see this issue more in terms of the protection already provided in the WTO TRIPS Agreement with respect to copyright, rather than as an issue of regulatory sovereignty or digital trade governance. The binding nature of TRIPS obligations for all WTO members notwithstanding, regulations mandating the obligatory disclosure of source code could be justified by network integrity or national security needs and could even be conducive to restoring much of the trust that has been lost in the post-Snowden era. Provided such regulations are enacted in a transparent, multi-stakeholder, consultative process, then applied in a non-discriminatory, good-faith manner, and only to the extent necessary to achieve the legitimate public policy objective in question, the question then becomes: What is the least trade restrictive measure possible?

The Need for Narrowly Formulated Exceptions Clauses

The best way to align the differences in these approaches among different countries is to establish basic principles and then provide for an appropriate degree of regulatory autonomy for governments and regulators. We essentially support this approach although we also have our concerns, given that any determination on whether or not an exception has been justifiably and fairly invoked must inevitably be made (where two countries disagree on the matter) in the context of international trade litigation. This issue is also worrisome in that some governments advocate

that the national security test, in particular, should be self-judging. Litigation can be a long and drawn out process even at the best of times, but especially in the context of FTAs, which generally have a much more infrequently-used track record when it comes to these provisions than the WTO, where many agree that the organization's dispute settlement system is the jewel in the organization's crown.

Because of the ease with which exceptions clauses can be used as a means of disguised protectionism, they should be narrowly formulated and accompanied with explicit requirements in terms of necessity, proportionality, non-discrimination, and multi-stakeholder consultation. This should be the case for national security exceptions, which we note have been increasingly invoked in the post-9/11 era and in the aftermath of the Snowden revelations.

We recognize the sovereign right of all countries to protect their citizens and the integrity of their borders, territories, and critical infrastructure, but governments should be held to a certain set of standards in invoking national security exceptions. These standards should be equivalent to those that already apply for the invocation of general exceptions clauses in the GATT or GATS, together with a proportionality and necessity test, and should be subject to the constraints provided by multi-stakeholder consultation.

It would be short-sighted to cherry-pick by exempting privacy and other areas of political sensitivities from



the GATT/GATS two-tier test for exceptions. This would undermine the value of trade commitments and could easily lead to an increasing number of exceptions from commitments that are subjective — rather than objective — and that are self-assessed and may very well be unjustified. In this context, we also view multi-stakeholder consultation as a mechanism by which companies and other stakeholders affected by the application of a restrictive measure can be given the opportunity to express their position on the proposed measures and to suggest alternative policy responses that would achieve the same regulatory objective but in a less trade restrictive way. We recognize that this is a bold demand to make, particularly in the present climate, but nevertheless feel it is warranted given the rise in digital protectionism the world has experienced over the last several years, and given the overriding importance of digital trade as a driver of such phenomenal and transformative economic growth.

Continued and inclusive growth of the digital economy will be best served by:

- » A set of rules that emphasize non-discrimination, open and fair competition, transparency, proportionality of regulatory responses, international best practices in domestic regulation, partnership and cooperation, and respect for intellectual property right;
- » Recognising that while governments have the sovereign right to enact rules governing digital trade, this right is best exercised through global consensus and global rules and policies, and that

- such rules should be exercised in a spirit of open and transparent international cooperation and while observing the principle of non-discrimination; and
- » Ensuring that all elements of the global ICT industry and all sectors affected by the digital economy should engage with governments in a constructive and mutually beneficial manner to achieve win-win outcomes for governmental development policies and digital connectivity objectives, as well as for the health and vitality of the global ICT industry.

As an industry leader and a global company, we at Huawei take very seriously our role in encouraging, fostering, and nurturing an optimal and conducive business and regulatory environment for digital trade and we will work constructively and openly with industry partners and government stakeholders to achieve this objective.

WTO e-commerce negotiations need to accelerate work

Finalising the WTO e-commerce negotiations was already a global business priority - before the pandemic. Given the dramatic positive contribution digitalisation has shown in allowing commerce to function where it would not have during the pandemic, finalising the negotiations is an imperative for post-COVID-19 recovery.

What is needed is for this agreement to be finalised in 2021. That is light-speed in trade negotiation time, but in terms of real-world needs, it could be characterised as arriving slightly late to the COVID-19 recovery party. It is essential to remember that the impact of a trade agreement only starts at the point it is implemented at the national level, implementation cannot begin until the agreement is finalised.

Finalising the agreement by the end of 2021 will be difficult if negotiators continue to work using the processes they have used up until this point. It would be wise for negotiators to bring more experts into the negotiations — whether or not they work in government — to ensure that the political agreements negotiators make are both commercially useful and likely to be implemented at pace. Experts may also come up with solutions to problems that non-specialist negotiators would not think of themselves. Political compromise in trade negotiations is always necessary, but the needs of global pandemic recovery must take priority over political expediency.



Conclusion

Through this paper we have looked at how national policymakers can evaluate the public policy imperative to facilitate digital trade based on a clear view of how it relates to the overall economy and other new imperatives for the digital era. Digitisation is integral to more than 15% of global GDP and rising dramatically year-on-year. Studies consistently show that the great majority of digitisation's benefits flow to traditional businesses. This reinforces how important it is for 'bricks and mortar' companies to embrace digitisation to improve competitiveness and build recovery and resilience — doubly so in the context of post-COVID-19 recovery.

We have seen how digitisation positively correlates with labour productivity, and productivity positively correlates to income growth. These simple realities have far-reaching consequences for policymakers looking to wipe out poverty, reduce inequality, and ensure their citizens, especially the large number of youth entering the workforce each year, will be able to enjoy increasing standards of living. This is true for both developed and developing countries.

A policy of enabling technology for all can unlock the potential of digital trade to create and share prosperity.

Different governments have different views on the best way to regulate international trade for the digital economy and this paper has explored various policy approaches that go a long way to accommodating the differing positions governments have chosen to take on some of these issues.

Given the urgency of post-COVID-19 economic recovery, the climate crisis, and economic inequality, early 2021 is the right time for a global reflection on how to unlock the potential of digital trade and to set common priorities for action. With global collaboration we can take a significant step forward towards a connected intelligent world with technology for all.

Huawei takes very seriously its role in nurturing an optimal business environment for digital technologies, and we will continue to work constructively and openly with industry partners and government stakeholders to achieve this objective.

After years of notable global trade tensions and assaults on globalisation, we are now seeing encouraging signs of green shoots, of a shift towards global collaboration, as we enter 2021. The conclusion of the Regional Comprehensive Economic Partnership across South East Asia, the EU-China Comprehensive Agreement on Investment, the WTO negotiations on e-commerce and investment facilitation for development slotted to conclude in 2021 are all evidence to this point.

If the global trade community can focus on priorities for digital trade in 2021, use the WTO Ministerial Meeting in the summer as a staging post, and better channel the increasing human energy demanding a better world, there are clear reasons to be hopeful and positive about 2021. This may well be the year we return to more multilateral cooperation and global collaboration to unlock the potential of digital trade and to create our own digital future.

Bibliography and Further reading

Many sources were consulted from international organizations supporting multilateral cooperation on Trade for global development. This report was written by experienced trade experts in Huawei HQ and

global offices. The authors are grateful for information from the following organizations and from Huawei participating in discussions organized by these organizations. The list is not exhaustive.

- » The B20
- » The International Chamber of Commerce, Paris, London & Beijing
- » German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE)
- » Organisation for Economic Cooperation and Development, (OECD) Paris
- » World Economic Forum (WEF) Switzerland
- » World Trade Organisation
- » The World Bank, Washington
- » International Monetary Fund.
- » European Commission, Brussels
- » Oxford Economics
- » European Centre for International Political Economy, Brussels
- » UN Conference on Trade and Development UNCTAD
- » World Association of Investment Promotion Agencies (WAIPA)
- » International Trade Centre, Geneva
- » WTO General Agreement on Trade in Services. (GATS)
- » "World Investment Reports" UNCTAD
- » UK Trade Policy Observatory
- » Various Chambers of Commerce
- » International Labour Organization (ILO)



Huawei's experts' original thoughts and fundamental research by third parties underpins the propositions on Digital Trade in this paper. These third party reports and sources, are all worth further study by those who

wish to understand more about this fascinating topic and its global context. Here are some of the sources referred to in the footnotes.

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