

BUILDING ITTI

INTELLIGENT TECH
& TRADE INITIATIVE

A DISCUSSION PAPER







BUILDING ITTI

INTELLIGENT
TECH & TRADE
INITIATIVE

A DISCUSSION PAPER

ABOUT ITTI



WHAT IS ITTI?

'ITTI - Intelligent Tech & Trade Initiative' is a multimedia project examining how cutting-edge technologies such as blockchain and augmented intelligence (AI) can bring about new functional and conceptual approaches, allowing for international trade transactions and negotiations to advance.



ITTI ultimate objective is to stir the debate involving the technology community, trade negotiators, business leaders and scholars on how to better pursue a constructive trade agenda. Mindful of both national and multilateral specificities, ITTI aims at countering deglobalization forces now operating in international trade.

ITTI gathers representatives from institutions and companies as different as ICC (International Chamber of Commerce), IBM, Gearbulk, UNCTAD and Columbia University in assessing how global trade can be positively impacted by the expanded use of blockchain and cognitive technology platforms.

WHY IS ITTI SO IMPORTANT?

Creating ITTI is an essential move that can drive trade beyond existing roadblocks. There is no doubt that blockchain and AI will boost trade growth. These technologies can help both SMEs (small and medium sized enterprises) and Emerging Markets seize a bigger piece of the global trade pie.

WHAT WILL ITTI STRIVE TO ACCOMPLISH?

Deintermediation, trust and agile market access are made possible by new technologies. Instrumental tools, such as blockchain or modeling negotiation scenarios through AI, will enhance both transactions and trade agreements. ITTI will work so that such technologies are inclusive of companies big and small, countries rich or emerging, so all can benefit from their extraordinary potential.

WHAT WILL ITTI PRODUCE?

ITTI's core activities will include the publication of research papers, establishing an internet-based platform, organizing conferences and the production of TV and YouTube documentaries and interviews series on the future of technology and trade.

WWW.ITTI-GLOBAL.ORG



ITTI
TEAM

DANIEL FEFFER

CHAIRMAN

DANIEL.FEFFER@ITTI-GLOBAL.ORG

MARCOS TROYJO

DIRECTOR

MARCOS.TROYJO@ITTI-GLOBAL.ORG

GABRIEL PETRUS

EXECUTIVE DIRECTOR, ICC BRASIL

GABRIEL.PETRUS@ITTI-GLOBAL.ORG

GABRIELLA DE FIGUEIREDO DORLHIAC

SENIOR POLICY ADVISOR, ICC BRASIL

GABRIELLA.DORLHIAC@ITTI-GLOBAL.ORG

JULIA QUINTELLA

PROJECT ASSOCIATE

JULIA.QUINTELLA@ITTI-GLOBAL.ORG

FRANCISCO DA SILVA PASSOS

PROJECT ASSOCIATE

FRANCISCO.PASSOS@ITTI-GLOBAL.ORG

LEONARDO CARMIGNANI

PROJECT ASSISTANT

LEONARDO.CARMIGNANI@ITTI-GLOBAL.ORG

—

DISCUSSION PAPER WRITING & EDITING TEAM:

MARCOS TROYJO

JULIA QUINTELLA

FRANCISCO DA SILVA PASSOS

DISCUSSION PAPER CONTRIBUTORS:

AMBASSADOR ALVARO CEDEÑO

GINNI ROMETTY

REBECCA LIAO

WOLFGANG LECHMACHER

JESSE MCWATER

JAN HOFFMAN

—

GRAPHIC DESIGN & PUBLISHING:

ELEMENTO DESIGN



TABLE OF CONTENTS

<p>1.1 - General landscape of the state of globalization and international trade: our approach in this Discussion Paper</p> <p>1.2 - General landscape of technology</p> <p>1.3 - Why blockchain and AI may be the ultimate game-changers</p>	<p>1] Introduction</p>	<p>/10</p>
<p>2.1 - Sizing up the real potential impact of blockchain</p> <p>2.2 - Trust and international trade</p> <p>2.3 - Origin, Provenance and international trade</p> <p>2.4 - Payments, Financing and international trade</p> <p>2.5 - Production & Supply Chains and international trade</p> <p>2.6 - Blockchain Focus pools</p> <p>Pool 1: Letter of Credit: obsolescence or new shape?</p> <p>Pool 2: How demand is shaped: a world without intermediation?</p> <p>Pool 3: The cross-sectoral challenge for blockchain applications: let's go horizontal</p>	<p>2] Blockchain</p>	<p>/19</p>
<p>3.1 - B2T (Business to Trade). AI may level the playing field for SMEs</p> <p>3.2 - C2T (Country to Trade). AI will allow nations to explore and expand their competitive advantages</p> <p>3.3 - N2T (Negotiator to Trade). Easy and structured access to cloud-based resources will make life easier for trade negotiators</p> <p>3.4 - M2T (Multilateral to Trade). Multilateral trade officers will be able to weigh pros and cons of alternative scenarios through AI's predictive potential</p> <p>3.5 - AI Focus Pools</p> <p>Pool 1: AI? How about infrastructure?</p> <p>Pool 2: AI curators are king. How to select them?</p> <p>3.6 - Intelligent trade and technologies: Preparing for the trade facilitation of the future</p> <p>3.7 - Smart trade multilateralism</p>	<p>3] Augmented intelligence</p>	<p>/41</p>
<p>4 - Key Discussion Paper findings</p>	<p>4] Key findings</p>	<p>/64</p>
<p>5 - Bibliographical references and suggested readings</p>	<p>5] References</p>	<p>/66</p>

1] INTRODUCTION



1.1 - GENERAL LANDSCAPE OF THE STATE OF GLOBALIZATION AND INTERNATIONAL TRADE: OUR APPROACH IN THIS DISCUSSION PAPER

Global trade and globalization have been facing growing challenges in recent years. The dynamics of freer circulation of goods, capital and people has lost steam. Trade protectionism is on the rise.

Multilateral institutions such as the International Monetary Fund, the World Bank, and the World Trade Organization (WTO) seem to provide slow and often insufficient responses to contemporary challenges. There are indeed various forces of “deglobalization” ranging around the world today.



At the same time, sophisticated technologies inaugurate a new era of threats and opportunities that holds the world in awe. The dawn of the Fourth Industrial Revolution projects the transformation of professions and the likely end of many job posts. Studies show robotics and automation, not cheap labor sources in Mexico or China, are mostly to blame for many deindustrialized sectors and towns in the US and Europe.

It is quite paradoxical, but if on the one hand technology in communications, social networks, co-working and transportation brings us ever closer, it is also one of the indirect causes of nationalistic industrial policies and protectionist trade measures.

As a consequence, WTO statistics show that since the aftermath of the Great Recession, defensive trade measures – in one word, protectionism – is definitely on the rise. Since the end of World War II, trade expanded formidably and at a much larger proportion than global GDP. And especially after the end of the Cold War and the inclusion of China into global markets, trade became the top driver of prosperity. But that changed from 2008 until now. We have moved from a long period of deep globalization to the current stage where deglobalization trends are strong.

It wouldn't be unfair to assume the risk of deglobalization and the emergence of industry 4.0 as perhaps the two most important dynamics unfolding in the world today. There are certainly many actions beyond the realm of trade that must be taken in order to make both globalization and the Fourth Industrial Revolution work. Retraining – and therefore the reskilling of the labor force – is definitely one of them. But by scanning the technological horizon out there, we feel there are innovations that may actually propel trade and globalization forward, in a way that is both inclusive and smart.

That is why we decided to propose an Intelligent Tech & Trade Initiative (ITTI), which was launched at the World Trade Organization during its 2017 Public Forum in Geneva. ITTI brings together technology and business leaders, negotiators and scholars in debating and devising ways on how blockchain (the trust ledger) and AI (augmented intelligence) can positively impact global trade.

The ITTI WTO launch was one of the first steps in a venture that gathers representatives from institutions and companies as



different as ICC (International Chamber of Commerce), IBM, Gearbulk, UNCTAD and Columbia University. We see the creation of ITTI an essential move that can drive trade beyond existing roadblocks.

We put together this Discussion Paper without the rigours of strictly academic works. We have however adopted a methodology in selecting the materials in which to base these papers that involved in-person and on-line interviews with leaders in technology, trade negotiations, business and scholars. When the items in this Discussion Paper are examined through the contributions of stakeholders outside ITTI's writing and editing team, due credit is given to author and source.

In all interviews we conducted, as well as in establishing guidelines to writing and editing, we privileged the interplay of hypotheses on how – both positively and negatively – blockchain and AI will impact trade. We have included quotes emerging from the interviews we carried out whenever we found them useful to understanding the subject at hand.

We have also highlighted considerations on SMEs & LDCs so as not to leave the more vulnerable side of the digital divide behind. We also tried to conduct the work presenting what we consider to be some of the most important “Opportunities x Roadblocks” equations, especially as they relate to technology, business and policymaking.

As both blockchain and AI can be approached from a great variety of angles in their intersections with global trade, we decided to focus on a number of aspects that may constitute further deepening of analyses as ITTI moves ahead into the future.

When it comes to blockchain, such focus is to be found in items under the notions of “Trust”, “Origin and Provenance”, “Payments and Financing”, “Production & Supply Chains”. More specific attention is given to topics such as the Letter of Credit, blockchain's potential in shaping demand and thus help bring about a world without intermediation, and finally a look into how cross-sectoral challenges will be faced when developing blockchain applications.

As per Augmented Intelligence, we suggest in this Discussion Paper four conceptual approaches. In “B2T (Business to Trade)”, we look at how companies conducting international trade

WE'VE GOT
TO MAKE
SURE THIS
NEW ERA IS
INCLUSIVE OF
COMPANIES
BIG AND
SMALL,
COUNTRIES
RICH OR
EMERGING,
SO ALL CAN
BENEFIT
FROM ITS
POTENTIAL.

transactions may have their operations enhanced. We also examine how AI may level the playing field for SMEs.

In “C2T (Country to Trade)”, we review how AI can further allow nations to explore and expand their competitive advantages and use AI tools to draw economic scenarios based upon the adoption of one or another industrial or trade policy decision.

In “N2T (Negotiator to Trade)”, we assess how easy and structured access to cloud-based resources can make life easier for trade negotiators when, for example, preparing for long and detailed negotiation rounds.

In “M2T (Multilateral to Trade)”, we investigate whether multilateral trade officers will be able to weigh pros and cons of alternative scenarios through AI’s predictive and modeling potential.

In the AI chapters, we also address issues such as the relations between AI and infrastructure investment, political economy considerations on how to select AI curators when establishing parameters, whether we should direct most-favored nation (policies) to indirectly help LDCs bridging technology gaps and what AI will possibly represent for trade facilitation and logistics. Towards the end of the present work, we summarize some key Discussion Paper findings.

In thinking forward, most of the items in this Discussion Paper are followed by what we call the “App Track”. It is about a set of “next-steps-like” summarized inputs that deal with the most important technological, diplomatic, regulatory, business challenges we must consider in developing trade-related blockchain and AI applications.

In the many activities ITTI will carry out in following this Discussion Paper, the App Tracks will serve as bases for workshops, design labs and the development of solutions involving the four stakeholder groups the initiative has selected as key to the fruitful interaction between technology and trade.

One should also bear in mind that the most central objective of this Discussion Paper is not to arrive at any final conclusions, but rather to foster the debate by addressing, although at a

preliminary level, some of the most important topics that can converge into building intelligent tech & trade initiatives.

1.2 - GENERAL LANDSCAPE OF TECHNOLOGY

BY **GINNI ROMETTY**,
CHAIRMAN, PRESIDENT,
AND CEO OF IBM CORP.

In today's economy (1), we are seeing companies, business models, products, and processes undergoing major transformation. Enterprises and governments are rapidly "becoming digital" as they seek to capture the cost savings, agility, and collaboration enabled by cloud, analytics, mobile, and social technologies.

However, digital is not the destination. Rather, it is laying the foundation for a much more profound transformation to come. Within five years, all major business decisions will be enhanced by cognitive technologies.

The magnitude of the transition was sensed for the first time in 2011, when we watched IBM's Watson system win on "Jeopardy!" At the time, We were watching history in the making: The technology known as augmented intelligence (AI) was finally moving from the lab into the world.

So why are we seeing this now? First, the technologies required for cognitive systems – not just AI, but a broad spectrum of capabilities that include natural language processing human-computer interaction, deep learning, neural nets, and more – have made exponential advances in recent years.

Second, the abundance of data being generated throughout the world today requires cognitive technology. Much of this data is "unstructured": video, audio, sensor outputs, and everything we encode in language, from medical journals to tweets. However, such unstructured data are "dark" to traditional computer systems. Computers can capture, move, and store the data, but they cannot understand what the data mean (which is why cognitive systems are so vital).

Finally, and most important, we will see systems that learn. We need systems that learn. Think of the challenges and issues we face today: predicting risk in financial markets, anticipating consumer behavior, ensuring public safety, managing traffic, optimizing global supply chains, personalizing medicine, treating chronic diseases, and preventing pandemics.

The challenges today go beyond information overload. In many ways, we live in an era of cognitive overload, characterized by an exponential increase in the complexity of decision making. It's impossible to create protocols, algorithms, or software code to successfully anticipate all the potential permutations, trajectories, and interactions.

But cognitive systems are not simply programmed. They actually improve with use, as they receive expert training, interact with clients and customers, and ingest data from their own experiences, successes, and failures.

Some people think of cognitive systems as supercomputers, and there is no question that the computational power behind systems like Watson is considerable. But thanks to the increasing prevalence of application program interfaces (APIs) – which can be encoded into digital services and easily accessed or combined in new ways in the cloud – it's possible to build a kind of thinking into virtually every digital application, product, and system.

And because we can, we will. If it's digital today, it will be cognitive tomorrow – and not a distant tomorrow. IDC Research Inc. has estimated that by 2018, more than half of the teams developing apps will embed some kind of cognitive services in them, up from 1% in 2015.

Cognitive systems are already transforming everything from the world-changing to the everyday. For example, cognitive oncology is a reality thanks to technology developed in partnership with Memorial Sloan Kettering Cancer Center in New York City that helps oncologists identify personalized, evidence-based treatment options based on massive volumes of data. This breakthrough technology is now helping scale access to knowledge at Bumrungrad International Hospital in Thailand, Manipal Hospitals in India, and more than 20 hospitals in China.

Cognitive assistants are at work helping build more intimate, personalized relationships at the Brazilian bank Banco Bradesco, the insurance company GEICO, and the retailer The North Face. Dublin-based Medtronic plc, a global health care solutions company, is creating a cognitive app for people with diabetes to predict a hypoglycemic event hours in advance. These are just a few examples of organizations that are using cognitive systems today.

It's important to note that we are not talking about the AI we see in movies. This isn't about creating a synthetic brain or an augmented human. Rather, this is about augmenting human intelligence. Indeed, there is nothing in either cognitive science or its application that implies either sentience or autonomy.

Of course, anyone familiar with the history of technology knows that technological breakthroughs often have major effects on work and jobs. Some jobs are eliminated, while others are created. With cognitive systems, we are already beginning to see the emergence of new disciplines — from data curation to system training, as well as new fields of scientific knowledge and new kinds of work — quite possibly more than in any prior technology revolution.

Data can be seen as the world's great new resource. What steam power, electricity, and fossil fuels did for earlier eras, data promises to do for the 21st century — if we can mine, refine, and apply it. Thanks to the new generation of cognitive technologies, we can. Augmented Intelligence will change how humans work together, make decisions, and manage organizations.

1.3 - WHY BLOCKCHAIN AND AI MAY BE THE ULTIMATE GAME-CHANGERS

As incipiently applied as they are today, both blockchain and AI carry the potential to boost commercial exchanges. Instrumentally, they can enable more proactive supply chains by predicting customer behavior, calculating fast and cheap shipping routes and foreseeing customer cancelations.

NEW
TECHNOLOGIES
CAN HELP
DELEGATIONS
GATHER AND
STRUCTURE
INFORMATION
AS WELL
AS PREDICT
DIFFERENT
NEGOTIATION
SCENARIOS.

Ultimately, an augmented intelligent supply chain is a proactive supply chain, one that is incredibly agile and able to alleviate the impact of inevitable disruptions. They also enhance compliance software that saves time, help draft smarter contracts or expand the access to trade financing.

But they can also be very inclusive. These technologies can help both SMEs (small and medium sized enterprises) and Less Developed Countries (LDCs) seize a bigger piece of the global trade pie. They allow for de-intermediation, increased trust and agile market access. This will help bridge the gap between large MNCs (multi-national corporations) and SMEs, as well as between post-industrial economies and LDCs.

They both lack access to trade networks or formal credit structures. Through blockchain, SMEs can better access credit and link into a broader and more mature investor ecosystem, enabling them to set up new trading networks and obtain funding by sharing financial data in a security-rich and transparent public arena. This will result in better transactions and trade agreements for both SMEs and LDCs.

AI can also play a major role in leveling the playing field in trade negotiations. Traditionally, countries have a tough time preparing for trade talks. Delegations, especially representing emerging economies, are not fully equipped to face tough and detailed minutiae.

New technologies however can help delegations gather and structure information as well as predict different negotiation scenarios. They can achieve that by using AI tools that give them access and interaction to cloud-based resources.

Additionally, we might be able to use AI more and more in predicting and modeling trade negotiation outcomes. Protectionism often results from subjective, ill-informed analytical dynamics. Not only do they originate from incorrect premises, but they generally do not take into account the negative effects it generates for workers and consumers both domestically and across the world.

Up until now, measuring the impact of protectionism -- or, on the contrary, the potential of free trade -- has relied on projection models that have not explored the full potential of new technologies.



By building and applying AI tools to project, predict and weigh the pros and cons of more or less trade agreements, countries will be able to better balance costs and benefits arising from industrial and trade policy decisions.

Many blockchain and AI applications to trade have to be adapted from other uses in finance, logistics, medicine or the legal world. And most will definitely have to be built from scratch. That is why we conceived ITTI as a multimedia project that examines how cutting-edge technologies can bring about new functional and conceptual approaches allowing for international trade transactions and negotiations to advance.

Its ultimate objective is to stir the debate involving the technology community, trade negotiators, business leaders and scholars on how to better pursue a constructive trade agenda. Mindful of both national and multilateral specificities, ITTI therefore aims at countering deglobalization forces now operating in international trade.

It is only by fostering the interaction among these key stakeholders that tech-intensive solutions will be crafted and developed. ITTI will do so by promoting research papers, organizing conferences and producing TV documentaries and interviews series on the future of technology and trade.

We've got to make sure this new era that dawns upon us is inclusive of companies big and small, countries rich or emerging, so all can benefit from its endless potential. By bringing technology and trade closer together, we will not only be lifting flows of exports and imports, but improving the very essence of international cooperation. ●



2] BLOCKCHAIN

2.1 -SIZING UP THE REAL POTENTIAL IMPACT OF BLOCKCHAIN

BY **REBECCA LIAO**,
VICE PRESIDENT OF BUSINESS DEVELOPMENT
AND STRATEGY AT SKUCHAIN

The specters of protectionism, geopolitical competition, and weakening international integration have recently made the underpinnings of global commerce seem insecure (2). Small wonder, then, that new ways of plugging into the international economy are flourishing.

Among these innovations is blockchain, a so-called distributed-ledger technology that allows transactions to be validated without the use of a centralized database. Blockchain has drawn the most attention for its role as a platform for cryptocurrencies: since its debut in 2008, it has helped spawn more than 800 of them, including Bitcoin.

But cryptocurrencies serve mostly as fodder for speculative investments, toys for technologists, and instruments for money laundering. Blockchain's deeper impact on global commerce will come from its use by businesses and financial institutions. Some are already employing it to digitize contracts, eliminate intermediaries in financial transactions, and make ledgers easier to audit. Because blockchain provides a distributed digital record that does not require trust or coordination between firms, it allows for secure, standardized transactions to occur almost instantaneously, even across borders.

Regulators should welcome these developments. The widespread adoption of blockchain would reduce friction in the global economy—and it would especially benefit importers and exporters, granting them access to the financial backing that many now lack.

Some observers have compared blockchain's potential to that of the Internet: a transformative invention that could set off rapid change thanks to the breadth of its possible applications. The truth, however, is that many of blockchain's applications will bring about only incremental improvements. The technology, for example, could eventually help big banks eliminate paper contracts, do away with clearinghouses, secure digital systems from cyber attacks, and quickly settle transactions—changes that could save such institutions hundreds of millions of dollars each year. But getting there will take time, because the existing financial infrastructure has been in place for decades and because it is hard to get competing institutions to cooperate.

For businesses to share blockchain's benefits in the near term, they need to have a preexisting interest in working together that extends beyond just cutting costs. That is why blockchain has so much potential in the field of trade finance (also known as supply-chain finance). Trade finance comprises the instruments underpinning international commerce—everything from letters of credit (the bank-issued guarantees of payment that importers offer exporters) to bills of lading (the documents that certify the contents of a shipment). The banks and companies that participate in trade finance have reason to

cooperate with one another, since they are connected to each other through a common supply chain.

In 2015, the global trade finance sector was worth some US\$2.8 billion dollars. The total available market, however, is about 10 times that size, according to the consultancy McKinsey and Company. The industry plays a critical role in global supply chains: without it, sending goods across borders would cost much more, and businesses would be unable to obtain the funding they need for their operations.

The trouble is that firms cannot access certain types of trade financing, thanks to regulations and risk. As a result, in 2015 the volume of global trade financing fell US\$1.6 trillion short of businesses' needs, according to the Asian Development Bank. The worst affected companies were small- and medium-sized businesses, whose requests for trade financing were rejected by financial institutions 57% of the time, compared to only 10 % for requests by multinational corporations. Because borrowers' ability to access trade financing depends on the condition of their balance sheets and because there is uncertainty regarding the enforceability of contracts, it is often prohibitively expensive for companies to secure capital.

Companies and banks, in short, have yet to scratch the surface of trade finance's potential. Unlocking it could reduce friction in international commerce, broaden the distribution of the gains from trade, and encourage higher economic growth. It is here that blockchain has a role to play.

There are a few major impediments to the growth of trade finance. The first are the capital constraints introduced by the Basel II and Basel III regulatory frameworks, which were developed by a committee representing the central banks of the G-10 countries in 2004 and 2011, respectively. Basel II and III sought to protect banks' balance sheets from economic shocks. Yet they have also stifled the ability of commercial banks to secure trade financing.

Start with Basel II. That accord required banks to keep enough capital to cover the obligations from financial instruments for at least a year, in an attempt to better insulate the banking system from economic disruptions. But trade finance instruments, which focus on short-term transactions, tend to mature more quickly than that—an average of some 80 to 147 days after they are issued, according to the

International Chamber of Commerce. As a result, Basel II encouraged banks to move away from the shorter-term financing that supports supply chains and into riskier assets with longer maturity periods. (The Basel Guidelines have since exempted some forms of trade finance from this requirement, but many are still affected.)

As for Basel III, it required banks to incorporate financial instruments that had historically been kept off their balance sheets into their calculations of leverage ratios, a measure that effectively weighs a bank's capacity to fulfill its financial obligations. Trade financing instruments fit that bill, and the result was that the regulation made some banks' leverage ratios appear riskier than they actually were. The financial services organization BAFT-IFSA estimated that banks' capital costs for trade financing would rise between 18 and 40 % when the Basel III regulations first came out, without a commensurate increase in returns. Naturally, banks prefer to have higher-yield assets on their books; as a result, the rule suppressed trade financing. (In January 2015, after a backlash from the trade-finance industry, the Basel Committee ruled that banks would have to account for only 20 % of the value of trade-finance instruments when calculating leverage ratios, but that change has been implemented unevenly.)

Then there are so-called anti-money laundering and know-your-client regulations, which seek to provide international standards for the prevention of financial fraud. These impede trade finance by making the process and paperwork involved in executing transactions more arduous. Counterparty risk (the risk that a buyer or seller is not financially sound) and performance risk (the risk that a party will fail to fulfill its contractual obligations) are the other limits on trade financing. High levels of these risks make it costlier for financial institutions to issue letters of credit and other financing instruments.

Banks are already working to digitize their trade-finance transactions to reduce costs and boost security. Some, for instance, are creating consortia that will standardize and integrate the activities of financial-technology firms. Such changes could produce cheaper, faster, and safer transactions. But those benefits alone are not enough to overcome the main source of the deficit in trade financing: risks and regulation of the kind introduced by Basel II and III.

There are two main ways that blockchain could help firms overcome those problems. First, blockchain introduces deep security. Not

only does the technology allow for the digitization of contracts and other paperwork, it can grant secure digital identities to the goods themselves, eliminating or at least accurately detecting performance risk. Next, it lets the firms involved in a transaction input and receive data about goods in real time without integrating their respective digital infrastructures.

All of that increases the information at firms' and financial institutions' disposal, enabling transactions that would otherwise carry an intolerable amount of performance risk. The certification of firms' fulfillment of their contractual obligations on the block chain also nearly eliminates counterparty risk. These benefits are out of the reach of shadow banks and digital trade-finance platforms, the existing institutions that seek to reduce the barriers to trade financing. Blockchain thus provides companies and banks a way to undo Basel II's and Basel III's retarding effect on trade finance while complying with their requirements. (The technology won't transform anti-money laundering and know-your-client regulations, however: those rules are internationally mandated, incorporated into the banking industry's compliance practices, and would require a major global effort to reform.)

The first international trade-finance transaction on the blockchain occurred in October 2016, when Brighann Cotton, together with Wells Fargo and the Commonwealth Bank of Australia, used the technology to send a shipment of cotton from Texas to China. The parties involved in that deal tracked the shipment, which was made on a smart contract, from Texas to China in real time.

That was just the beginning. Trade finance on the blockchain could go beyond real-time visibility, transparency, and security. The next step is to turn these benefits into new opportunities for investment, even new financial instruments, narrowing the trade-finance gap rather than simply improve the sector's current offerings.

There is a real chance that blockchain's potential has been overhyped. In the case of trade finance, however, it might just be a tool that could make global markets more accessible at a moment when they seem to be closing off.

2.2 - TRUST AND INTERNATIONAL TRADE

BY **WOLFGANG LECHMACHER**,
HEAD OF SUPPLY CHAIN AND TRANSPORT INDUSTRIE,
WORLD ECONOMIC FORUM, & **JESSE MCWATERS**,
PROJECT LEAD, DISRUPTIVE INNOVATION IN FINANCIAL
SERVICES, WORLD ECONOMIC FORUM

International trade is under pressure (3). Fears fueled by the global refugee situation and terrorist threats have led to tighter border controls – and these come at a cost. Every inspection of goods, every stop along the supply chain, eats up time and drives up prices. It harms businesses and consumers alike. Those involved in international trade – whether manufacturers, trading houses, transportation companies or banks – are seeking ways to ease the situation and cut time and costs.

Blockchain technology can help. The cloud-based ledger ensures that records can't be duplicated, manipulated or faked, and increased visibility in parts of the supply chain promotes an unprecedented level of trust. It means governments can better protect citizens, while business partners can be certain trading documents are real. Consumers can check the quality and provenance of products, and banks can reduce processing time. And it's all paperless.

Thanks to blockchain, all kind of legal, financial and product-related information can be made available. This allows even the least trusting parties to comfortably conduct business. With further investment and experimentation, blockchain could potentially hide confidential information to protect the interests of trading parties – pricing information, for example.

Does it work in the real world? Barclays reported the first blockchain-based trade-finance deal in September 2016. The transaction guaranteed the trade of almost US\$100,000 worth of cheese and butter between Irish agricultural food co-operative Ornuia and the Seychelles Trading Company. The process – from issuing to approval of the letter of credit, which usually takes between seven and 10 days – could be reduced to less than four hours. Other banks are also exploring ways blockchain technology can improve processes along the supply chain. In August 2016, banking consortium R3CEV

reported that 15 of its members had joined a trade finance trial to test its distributed ledger protocol, named Corda. Also in August, Bank of America, HSBC and the Infocomm Development Authority of Singapore (IDA) revealed that they had built a blockchain application to improve the letter of credit (LC) transaction process between banks, exporters and importers.

It's not only banks: Maersk, the world's largest container-shipping line, has been participating in a proof-of-concept initiative, using blockchain expertise from the IT Department of the University of Copenhagen to digitize the ships' cargo inventories. These so-called "bills of lading" require an enormous amount of paper. A shipment of roses from Kenya to Rotterdam, for example, can result a pile of paper 25cm high. And the cost of handling it can be higher than the cost of transporting the containers. Maersk's aim is to optimize the flow of information while raising visibility along the supply chain.

Often when making a purchase, buyers don't know where the goods they ordered are coming from, or even whether they have been shipped at all. With blockchain, consumers can be informed of every step in the process. Combined with the internet of things, this could also extend to the care with which a product is transported. Swiss start-up Modum, for example, uses blockchain as a way of assuring recipients that pharmaceuticals have remained within an acceptable temperature range while in transit.

Citizens are worried that reduced barriers at the borders, as well as trade agreements, increase the risk of terrorism and illicit trade. Blockchain technology can in fact provide the backbone of a system of authorized trusted participants, bringing everything into the light, whether it's a product, the party selling it or the path it takes to reach the buyer. Consumers and watchdogs, public and private, can trace every item moved through the authorized blockchain-backed channel and validate or reject both product and party. Customs clearance, too, can be optimized using blockchain. Parties that are part of the group can act quickly and efficiently, while others face scrutiny.

Immutable records on every aspect of a transaction – from the source of the raw material to where and how the products were manufactured, to their distribution, maintenance, repair, recall and recycling histories – are the new basis of trust. Information about ownership, provenance, authenticity and price are all held in the

blockchain. Digital product memories connected to smart devices along the supply chain will provide secure proof of everything from manufacturing processes to quality controls. This will reduce the cost of compliance, i.e. the adherence with laws and regulations. Furthermore, this will open doors for replacing current product labelling practices to protect consumers and accelerate customs-clearance processes. Customers and consumer-protection organizations, as well as customs authorities, will have all the information they need to decide to buy or not to buy, to let goods through the border or to block them.

Blockchain has the potential to become the new gold standard of business and trade. But first, all nations need to accept the new technology. There are technical hurdles to overcome too. First, blockchain protocol(s) used to secure the ledger of global trade and manufacturers must be trusted by all of its users and be effectively un-hackable. Technical capabilities to handle very large transaction volumes will also need to be enhanced and the cost of maintaining the protocol may need to be lowered. Ordinary companies and individuals will need to be onboarded into the machine-to-machine (M2M) economy. The liability model of trade conducted on the blockchain will need to be reviewed as the appropriate treatment of liability may differ from current models.

Blockchain can help to reinforce trust in today's complex and globalized world – giving citizens and governments fresh confidence in the global exchange of goods.

2.3 - ORIGIN, PROVENANCE AND INTERNATIONAL TRADE

The negative impacts of counterfeiting and piracy are projected to drain US\$ 4.2 trillion from the global economy and put 5.4 million legitimate jobs at risk by 2022, according to Frontier Economics. As Jeffrey Hardy – director ICC Business Action to Stop Counterfeiting and Piracy – puts it: counterfeiting and piracy “deprive governments of revenues for vital public services, forces

higher burdens on tax payers, dislocates hundreds of thousands of legitimate jobs and exposes consumers to dangerous and ineffective products.”

Selling fakes or unauthorized replicas of the real products can be limited in two ways. Either by avoiding access to the market (control by customs or consumer protection authorities) or by deterring consumers to buy through providing information regarding the origin of the product.

In both cases, thanks to blockchain technology, an immutable track-record could be made available to authorities and consumers to check the quality and provenance of each product. As an example, IBM works with Everledger, a global start-up that uses digital ledger technology to reduce fraud in the multi-billion dollar diamond industry as explained by Arvind Krishna - IBM Research.

Blockchain technology is used, in this case, to store certificates of authenticity and origin – shifting the certificates of more than one million diamonds from paper to the cloud – and cross-check this data in the light of the myriad of regulations and records regarding supply chain, including time and date stamps and geospatial information. This technology can prevent the flow of “conflict diamonds” into the market but could also be applied to a whole range of high value goods such as works of art, rare wines, automobiles or fashion.

To fight against smuggling, blockchain technology can help customs around the world to automatize procedures – thanks to the access to trustworthy ledgers – and track goods from their origins. Customs will be able to streamline their procedures by dealing more effectively with large complex data sets and use with more precision their inspection resources. While lowering illicit activities, customs will also be able to decrease their operational costs and enforce the payment of applicable tariffs. The advantages are clear but Governments will need to adapt their procedures and embrace these new technologies.

The unauthorized use and reproduction of content has been fuelled by the anonymity on internet. However, thanks to blockchain and the cryptocurrencies based in that technology, pirates can be incentivized to be informers. Custos Media

Technologies – a South African startup - has embedded an imperceptible bitcoin credit into pirate digital media files, thus providing pirates with an incentive to check the origin of the file. When the pirate claims the prize (anonymously, due to the cryptocurrency), Custos can immediately detect the leak and inform the client of who the original recipient of the media was.

These mechanisms show how blockchain technology allows more protection of intellectual property rights. The enforcement of these IP rights is essential to foster innovation and key to trace the quality of products – with a special impact on SMEs in the sector of agriculture (products with controlled appellation of origin) and fair-trade initiatives in LDCs.

APP TRACK: ORIGIN, PROVENANCE AND INTERNATIONAL TRADE

— Technological Challenges

Counterfeiting: Tracing the qualities of products with blockchain implies the implementation of underlying technologies such as RFID or 3D scanners.

Smuggling: IT systems have to be adapted to deal and interrelate complex data sets namely related to products and transportation documents (bill of lading).

Piracy: In order to incentivize informers, a rewarding system should be implemented based on crypto currencies to guarantee their anonymity.

— Business Challenges

The impact of the blockchain technology is only possible if the quality of data input is ensured. Managers should raise the levels of awareness across the supply chain.

— Regulatory and Diplomatic Challenges

Authorities will have to adopt blockchain technology to participate in the acceleration of international trade. Regulation should be adapted to take into account blockchain technology. Specifically, legislators will have to reflect on how such technology can impact customs codes and streamline clearance procedures.

— Next Steps

Blockchain projects have already been implemented with customs in several countries. In order to build the first steps before a deeper reform, an international debate would be fit to underline the implementation challenges of such technologies and quantifying the investment needed (comparing to the advantages). These initiatives could have greater impact thanks to multilateral organizations.

2.4 - PAYMENTS, FINANCING AND INTERNATIONAL TRADE

In the contemporary world, fraud and error within financing for trade can lead to loss of money and business. Blockchain has the potential to lead an expanded access to investment and the credit ecosystem by improving efficiency through reducing transaction times and improving currency conversion.

At the moment, monetary transfers from country to country can take days, which slows down international trade. IBM recently announced a project with several countries in the Pacific region to make money transfers between nations faster using blockchain. This will certainly have a positive impact on SMEs as speedier monetary transfers will increase their access to global finance.

Blockchain also has the potential to aid in currency conversion. One possibility would be converting a currency into a token which would then circle around the blockchain networks. Such a token could have little or no conversion rates. This could give LDCs increased access to investments as the costs to exchanging their weaker currencies would be lowered.

While banks are still developing currency conversion projects, there are already start-ups that allow users to make monetary transfers between currencies and countries with no exchange fee. Such apps make it much easier for SMEs to conduct international transfers as it reduces costs and leaves SMEs exposed to the risk of default for shorter periods of time.

Among developed countries, the above examples can already be largely achieved with current technologies and there is a business demand for them, so the largest roadblock is likely to be regulatory. While some countries and banks are already initiating platforms and trials using ledger-based technologies, it is likely that legislations will have to be passed in order to solidify these processes. Currency exchanges will have to be monitored by central banks as well as international monetary regulatory agencies.

However, the transparent nature of ledger-based technologies will make the process of monitoring straightforward. Central Banks will also be faced with the challenge of how to control money supply when the country's currency is located within a virtual economy. Furthermore, stringent and adequate privacy controls would also have to be implemented in order to stop participants in the network from exploiting the recorded information and manipulating the market.

In LDCs as well as in developing and developed countries, one roadblock will be changing mindsets in order to encourage and promote the use of blockchain for finance and trade. Bernadette Lewis, Secretary General of the Caribbean Telecommunications Union has argued that, most Caribbean countries are “not seeing a realization of the potential” of e-government services because they are still reliant on bureaucratic procedures that are over 100 years old.

This is a truly global issue. There is often a pushback from institutions against blockchain, which is sometimes seen as a disruptive technology with the potential to render elements of the financial industry redundant.

At the same time, however, blockchain offers banks – who have struggled to recover their image after the 2008 financial crisis – the opportunity to improve the way they are perceived by the general public because blockchain is synonymous with transparency and security.

APP TRACK: PAYMENTS, FINANCING AND INTERNATIONAL TRADE

— Technological Challenges:

Central banks will have to monitor online currency conversions carried out through blockchain technology. Central Banks will also be faced with the challenge of how to control money

supply when the country's currency is located within a virtual economy¹. Furthermore, stringent and adequate privacy controls would also have to be implemented in order to stop participants in the network from exploiting the recorded information and manipulating the market².

— **Business Challenges:**

Reliance on old bureaucratic procedures can lead to a pushback against new financial technologies. Central banks in some countries may lack the budget resources to implement new monitoring schemes. Smaller banks which lack the ability to implement financial programs running on blockchain platforms may lose business to banks which are able to do this.

— **Regulatory and Diplomatic Challenges:**

Converting a currency into a token with little conversion rates which would circle around international financial blockchain networks would require monitoring by international monetary regulatory agencies. All countries – or at least LDCs and developing countries – would need to be part of such a scheme; otherwise developed nations would be able to profit more from trade.

— **Next steps:**

Central banks should work alongside private banks to assess how the monitoring of blockchain currency conversions would work. Governments must discuss the future of blockchain and finance in order to pass relevant legislation. Multinational organizations and international monetary agencies should discuss the possibility of cheaper currency conversions for countries when trading.

2.5 - PRODUCTION & SUPPLY CHAINS AND INTERNATIONAL TRADE

“Is the world really flat?”, as Thomas L. Friedman puts it? One could argue it is getting flatter and flatter but still distance and administrative differences are important obstacles to improving international trade.



Blockchain technology can have an impact on the different layers of production and supply chain: by bringing production closer, facilitating procurement or speeding logistics -specially the last mile delivery.

Let's go through the different steps of the supply chain. First, procurement, companies from large corporations to SMEs, could access an open market where the origin of goods, quality and costs could be easily compared. As the information would be clearer and more accessible to the buyer, intermediaries will lose relevance and purchase procedures will be streamlined. SMEs, around the globe, would have direct contact with corporate clients that would normally delegate part of their procurement to purchasing centres.

Next, in the production process, the real-time tracking of each product will be possible all along the production line with the help of bar code scanning. The blockchain technology can add intelligence to the system by enabling fast communication between production lines and internal departments – such as procurement or sales. In such case, inventory would be automatically purchased if a production line communicates the lack of material. The technology could even bridge the production site to real time demand. Blockchain could be used to build a holistic platform from raw material to final product purchased by the customer.

The production manager will have a clearer view of the process of production at any time. Keeping immutable records of the products from procurement to customers hands can bring efficiency gains to a new level. Blockchain technology can help to close the gap between demand and supply. All this is possible today, but the true added value of blockchain is simplifying the process by providing perfect tracking.

Furthermore, blockchain could also reduce the distance between production and customers by enhancing 3D printing. The flow of knowledge could cross borders in a fast and secure way. So, engineers – without knowing each other – could collaborate to create a 3D model by adding autonomous bricks. Modelling could now be more interactive and easier to share³. In this case, the tamper-proof ledger might be central to reform today's heavy procedures for patenting.

Logistics can gain in efficiency as demonstrated by the initiative of Maersk. Cutting down on paperwork, creating a centralized

communication platform and making fraud easier to track, blockchain also has “the potential to better optimize the use of empty containers by giving more parties access to the availability of nearby ships.” as it was explained by Ramesh Gopinath - IBM Research vice president. Logistics players will be able to offer more speed at even low cost.

Also, with the optimization of existing facilities in mind, a Singaporean start-up - Fresh Turf – shows how the blockchain technologies applied to a network of lockers can facilitate the last mile delivery. By allowing anyone to rent his locker – in apartment complexes for instance, greater access to lockers and better utilization of lockers are possible . For receivers, Fresh Turf allows tracking the delivery and gives a safe access to the nearest locker. For logistics companies, efficiency gains in door-to-door deliveries can be easily implemented. Less time is needed per delivery and thus less cost for logistics players which can be reflected on customers too.

Reaching secure traceability in minutes requires input of data at each and every step of the supply chain. Walmart’s Vice President for Food Safety, Franck Yiannas, underlined that new technologies should be implemented first at the base of the production line, with “farmers, field workers that are the first to collect data and insert onto a blockchain”.

awareness should be raised among each player along the supply chain to make the adoption blockchain technology impactful. An effort is needed from private players but also from legislators that would be key in streamlining the procedures in customs around the world.

APP TRACK: PRODUCTION & SUPPLY CHAINS AND INTERNATIONAL TRADE

— Technological Challenges

Companies will have to identify - along the supply chain - the activities in which the blockchain have a strong impact. Focusing on pilot projects will ensure a smooth transition and will limit the negative effects on the existing IT systems.

— Business Challenges

Managers should raise awareness regarding the quality of data input at all stages of the supply chain and should ensure the homogeneity of such data.

— Regulatory and Diplomatic Challenges

Legislators should continue the effort of simplifying legal requirements for logistics and procurement along the supply chain. The modernization of intellectual property laws is also needed to protect faster exchanges of knowledge: research built by blocks or via massive research collaboration (crowd platforms).

— Next Steps

In order to ensure a smooth transition, a pilot project for the implementation of the technology should be identified. Furthermore, a holistic understanding of the implementation is needed to budget the implementation of the whole solution and avoid multiple add-ons to an initial package.


2.6 - BLOCKCHAIN FOCUS POOLS

POOL 1: LETTER OF CREDIT: OBSOLESCENCE OR NEW SHAPE?

Getting paid is one the main fears of exporters. That is why letters of credit are the most actively used structured payment instruments in international trade. This instrument guarantees that the exporter will be paid upon delivery of the goods to the importer. In order to build trust between importer and exporter – that might not know each other – the other players of the transaction take part in the payment procedure.

A letter of credit is a manually documented process that implies the drafting and the exchange of physical documents – such as bills of lading – between the buyer, the seller, banks, insurers, shipping companies, port authorities and customs – all taking part in the transaction.

Obtaining a letter of credit can be costly in terms of effort, time



and resources. With a view to minimizing these costs, the adoption of blockchain by banks can now streamline the process: fostering automatization, avoiding manual inputs of the parties and enabling faster communication thanks to the real-time tracking of the transaction.

In short, blockchain can turn an ineffective and expensive process of validating documents into a real-time platform that brings together the entities involved in the transaction.

On this same platform, these entities will be able to upload and validate documents in a transparent and safe way but also pay the port, customs or the exporter once the import is confirmed. With that payment, the contract is completed.

In December 2016, S7 Airlines and Alfa-Bank were part of the early adopters of blockchain technology to execute a letter of credit. In this transaction, smart contracts were used to capture in blockchain technology the bank's actions with respect to the opening and execution of the letter of credit.

Also, China CITIC Bank and Minsheng Bank used the blockchain to complete a 100-million yuan letter of credit transaction. Avoiding paper and mail delivery, blockchain technology made this transaction possible without any requirement for mutual trust which is one of the main selling points. Blockchain technology is changing the way trade finance is executed – cutting transaction costs, making payments faster.

For IBM, a blockchain platform that permits “sharing only among entrusted and allowed parties” would increase speed, privacy and transparency and is a scalable solution. Trade finance is moving from physical letters to a real-time and secure platform. International payments based of letters of credit can take ten days to process. Blockchain technology might bring the execution of such payments down to one day.

The obsolescence of the letters of credit might be an opportunity for SMEs to access global markets without facing bureaucracies that would normally be more easily solved by heavier structures.

APP TRACK: LETTER OF CREDIT: OBSOLESCENCE OR NEW SHAPE?

— Technological Challenges

The transition to blockchain implies adaptation of IT systems while ensuring the stability of the financial sector and its security.

— Business Challenges

To be impactful, all entities involved in a transaction should adopt the technology. Players from different sectors and countries have to switch from paper-based procedures to a real-time platform. Companies have to grow awareness to their clients, providers and partners to enhance the trust in blockchain technology.

— Regulatory and Diplomatic Challenges

Payment procedures are highly regulated at a national and international level. Banking regulation should be reviewed to understand if the blockchain technology fits the actual regulatory framework.

— Next Steps

Banks are first movers in blockchain. Feedback sessions with early adopters of the blockchain could help the financial regulatory authorities to prepare the framework to technological reforms. Creating a task force within the financial regulatory authority could help to establish a more dynamic and competitive financial sector.

POOL 2: HOW DEMAND IS SHAPED: A WORLD WITHOUT INTERMEDIATION?

Blockchain shortens the distance between supply and demand. Intermediaries were needed to create a relation of trust. Now, trust is being transferred to the technology itself.

Demand has been generally observed at the scale of a single supplier, WYSIATI (“What you see is all there is”) as coined by Daniel Kahneman. In order to have a wider view of the demand, intermediaries would speak to each other.

Today, the supply side has a holistic view of the demand thanks to the Internet. Each intermediary serves the demand they can reach.



In other words, intermediaries target a focus market – extending the trust relation as far as they can.

But tomorrow, blockchain will help suppliers reach additional clients thanks to greater automation (in production, logistics and payments) but it especially becomes a new sort of paradigm: trust in the blockchain will allow two parties that do not know each other to do business.

For instance, recent economic successes were built around a platform – Uber, eBay or Airbnb. These platforms add trust to peer to peer exchanges. A French company named Blablacar, for instance, connects drivers with empty seats to people that do not know each other. The platform offers safety and payment facilities. For this company, the trust in the platform is the key success factor. As trust is being transferred to blockchain technology, such platforms and “winner-takes-it-all” models might lose relevance to pure peer-to-peer models.

Economic models might change but consumers may also change. A more transparent market and a simpler supply chain might randomly connect a Brazilian consumer to small producer in Asia – without previous relations of trust. Standardization - needed by important intermediaries to gain efficiency – might now lose some space to diversity thanks to blockchain. Consumers also have hearts and will now have more room to consume differently - looking for values and culture embedded in a particular product.

At Coupa inspire, blockchain was used to decrease intermediation and make vending machines smarter. The goal here was to answer demand almost automatically. Coupa inspire tracks and controls the demand of tools by workers (often forgotten within the facilities of the company) thanks to vending machines.

Every requisition is communicated to the central procurement system which not only updates inventory but also tracks who used what and allows the better understanding of usage patterns. Similar procedures could be implemented thanks to RFID tags for larger items that would automatically be requisitioned when the tag left the store room.

New technologies – including augmented intelligence, big data or 3D printing – are on the way to seriously disrupt the processes

of matching supply and demand. Manufacturing will become more responsive and customizable. In other words: “supply chains are becoming demand chains”. Blockchain will be key in such disruption as trust should move from intermediaries to a “decentralized trust model”. Meanwhile, new intermediaries will be needed to help companies to adopt this new technology.

APP TRACK: HOW DEMAND IS SHAPED: A WORLD WITHOUT INTERMEDIATION?

— Technological Challenges

Pilot projects should be defined so as to allow a progressive adoption of blockchain technology along the supply chain without interfering with existing IT systems.

— Business Challenges

The adoption of blockchain technology could push businesses to change their models from B2B to B2All (business-to-all). Having direct contact with a wide range of customers will require the adaptation of sales procedures (tools allowing more automation and dedicated teams).

— Regulatory and Diplomatic Challenges

In several countries, along the supply chain, administrative procedures could be an obstacle to flawless supply chains. A shorter bridge between producers and consumers is only possible if procedures with customs brokers or quality control of imported goods are streamlined. Also, licenses to sell or serve might be an obstacle to bypass intermediation.

— Next Steps

Thematic workshops organized by the public sector are needed to push national players to reflect on the progressive move closer to customers. Comparative advantages of countries are certainly at risk with the new technology. B2All requires adaptation of business models in order to make sure these national players will still be in the picture and not be slashed from the future supply chain.

POOL 3: THE CROSS-SECTORAL CHALLENGE FOR BLOCKCHAIN APPLICATIONS: LET'S GO HORIZONTAL

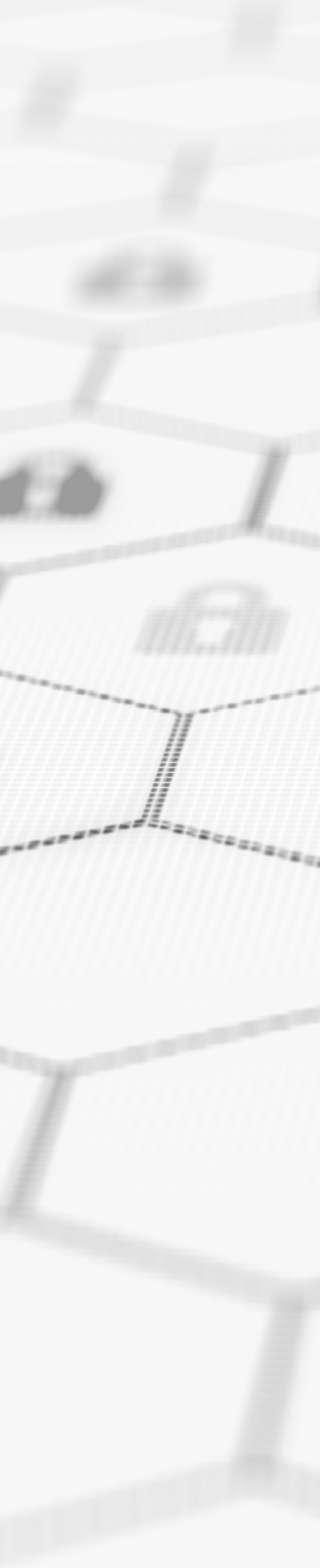
We have seen how blockchain can have an effect on trade and finance but the technology has the potential to impact a wider range of industries. Because of blockchain's ability to record transactions securely and transparently, it can be applied to several different sectors.

Large food suppliers and manufacturers, such as Unilever, Nestlé and Walmart have been working on an initiative with IBM to apply blockchain technology to food production and supply systems. The goal is to use blockchain to trace any contamination along the production chain and quickly remove the affected food. Consumers and regulators would also be able to trace food back to its origin. This could lead to a safer and healthier global food sector as producers would be held to higher standards.

It is easy to imagine all the supply-chain industries blockchain technology could be applied to. However, even industries where the benefits are less obvious could see a move towards blockchain in the future. The technology could make it easier for journalists to guarantee the authenticity of their sources and could make it easier for sources to divulge sensitive information securely.

A recent study conducted by Deloitte found that 50% of media companies surveyed were using blockchain or planned to do it. Amy Webb, founder and CEO of the Future Today Institute believes that there could even be a public ledger that could "exchange authentic news and pars out fake news". In a world where news is increasingly shared online and across social media without much thought given to the veracity of the story, the authentication and transparency elements which are core to blockchain could change the way we view news stories.

In Sweden, blockchain has even begun to be applied to the real estate sector. Swedish land registry authority, Lantmäteriet, conducted a trial of that technology in 2016. Copies of records are held by Lantmäteriet, banks, and real estate agents and each step of property purchases can be verified and recorded on the blockchain. The long-term goal is to allow buyers and sellers to use a mobile app in order to sign a bill of sale. Lantmäteriet



foresees that using blockchain technology could save Swedish taxpayers more than €100m a year through faster transactions and eliminating paper processes. •

3] AUGMENTED INTELLIGENCE



3.1 - B2T (BUSINESS TO TRADE). AI MAY LEVEL THE PLAYING FIELD FOR SMES

Increased access to technological advances such as augmented intelligence is something generally associated with larger companies, as the assumption is that SMEs would not be able to afford or have access to AI.

While it may seem counterintuitive, a recent study from Adecco UK&I found that smaller enterprises tend to be more positive about new technologies than their larger counterparts. The study found that larger businesses are almost twice as skeptical as SMEs about the impact that AI can have on business. AI has the potential to level



the playing field for SMEs by giving them easier access to loans as well as allowing them to conduct more efficient business.

One struggle that SMEs face is securing loans. For smaller banks, a large amount of operational costs goes into processing loan decisions. As a result, banks are usually less willing to loan to SMEs as it is more time consuming to process loans to small businesses and the costs of making a mistake are high. Augmented intelligence within the banking industry can change this. If banks begin processing loan decisions by using AI technology, the time spent deciding on each loan will decrease and the chances of making a mistake will significantly lessen. This will give SMEs more opportunities to secure loans, allowing them to grow their business.

SMEs who integrate AI into their business processes will be able to rely on the technology to make decisions and be more efficient. For example, SMEs often have limited knowledge of new financial resources and it can be difficult for small businesses to keep up to date on regulations.

Thus SMEs can resort to machine learning technologies such as Concur's Fraud Detection and Audit capabilities. The technology analyzes expense reports and identifies errors and fraud. This is particularly useful for smaller companies who cannot hire external auditing companies either due to time or monetary constraints.

Another option is IBM Regulatory Compliance Analytics with Watson. This improves the manner in which businesses manage compliance by reducing time and costs to the business. This allows SMEs to save on costs related to understanding regulatory controls and requirements. It will also improve risk management, facilitating the manner in which businesses assess regulatory requirements across multiple sectors – crucial for SMEs looking to grow and expand.

There is a drawback to SMEs who outsource their AI needs to various third party providers. According to Sean Owens, Director of Data Science at Cloudera, the risk is a fragmented view of the customer or channel where each individual vendor's AI capability is not integrated into the holistic view.

This is crucial because all functions and processes within a business affect one another. If the AI technology used does not comprehend all these different processes it will yield less reliable

results. Consequently, while at first SMEs will likely have to resort to third party AI providers, it may be more beneficial for them in the long run to have in-house AI capabilities.

APP TRACK: B2T (BUSINESS TO TRADE)

— Technological Challenges:

AI start-ups specializing in offering auditing services to SMEs will need to be up-to date on new domestic as well as international government regulations. SMEs which rely on third party providers will not have access to streamlined AI recommendations and results.

— Business Challenges:

Larger companies will be able to implement in-house AI capabilities, which SMEs may not be able to compete with. On the other hand, larger companies may be more reluctant to implement AI as their employees may fear becoming redundant.

— Regulatory and Diplomatic Challenges:

Governments should enact easy-to-implement regulatory reforms in order to make trade involving SMEs more fluid.

— Next steps:

SMEs must bear in mind the long-term drawbacks of not using AI capabilities. National trade promotion agencies should establish series of informative workshops on how SMEs can use AI to boost their international trade potential.

3.2 - C2T (COUNTRY TO TRADE). AI WILL ALLOW NATIONS TO EXPLORE AND EXPAND THEIR COMPETITIVE ADVANTAGES

At times, the temptation for countries to close themselves to global commerce is huge. Using augmented intelligence

to make trade decisions could allow countries to expand their competitive advantages by helping them better inform their trade policies.

Government officials need a range of data in order to make decisions on how to best promote a given sector of the national economy both domestically and internationally. This information can include anything from tax levied on producers, volume of domestic sales, volume of exports and imports, and more.

This is readily available to decision makers today. However, it can be time consuming to locate all the relevant data. Furthermore, policy is often impacted by public opinion and interest groups who lobby for protectionist policies –even when this might not be the best way forward for a nation. Officials must also consider World Trade Organization rules when writing up domestic trade policy, as they must be wary of flaunting established international trade agreements.

Augmented intelligence can speed up the process of information gathering. If all the information for a given sector were in one database, AI machines could quickly aggregate the relevant data and analyze the best way forward in order to promote domestic products, all the while keeping WTO rules in check. AI machines could assess all the data available and weigh the pros and cons of each potential strategy, eventually suggesting the next steps to be taken.

Such a technology already exists in its early forms. IBM Watson Trade off Analytics is capable of helping people making decisions while balancing multiple factors and objectives. The technology could be expanded and adapted in order to be used for trade policy.

Countries could purchase AI solutions and make them available to government officials, much like a hospital purchases Watson Medical. Alternatively, technology providers could work on sector-specific software. For example, a small or medium sized technology firm could specialize in offering bespoke AI solutions to inform trade policy regarding national production of a given sector, such as white goods. This could have a potential benefit for SMEs in the sector, who could hire such firms to help them improve business based on knowledge gained of the overall sector nationwide.

For LDCs, the biggest roadblock will be access to these new technologies, though investing in this could be greatly beneficial

in the long-term. Samoa's Minister of Communications, Afamasaga Lepuia'i Rico Tupa'I, has stated that Samoa moved from LDC status to a developing country in part by leveraging ICTs to develop faster. The University of Samoa is also starting a digital literacy program for government workers. Other countries investing in technology could potentially see similar results.

Access to these technologies for both developed and least developed countries will be a turning point in how nations create trade policies and could minimize the influence of interest groups and politics when making trade decisions as well as boost international trade as a whole.

APP TRACK: C2T (COUNTRY TO TRADE)

— Technological Challenges:

Selecting the right curators for the data banks in each country will be key. In some nations, access to data will be a challenge. Government workers involved in creating domestic trade policies will need to learn how to use the new technologies available to them.

— Business Challenges:

Some interest groups may pushback against using AI to inform all domestic trade decisions, as the outcomes may not be in their best interests.

— Regulatory and Diplomatic Challenges:

Governments will have to implement technology programs in order to strengthen their ability to use AI. Countries with few technological experts will risk losing a competitive advantage.

— Next steps:

Nations which lesser technological capabilities will need to direct further invest to this area. Countries need to work on making comprehensive databases containing relevant information that can be used as references to developing such predictive and modeling tools.

3.3 - N2T (NEGOTIATOR TO TRADE). EASY AND STRUCTURED ACCESS TO CLOUD-BASED RESOURCES WILL MAKE LIFE EASIER FOR TRADE NEGOTIATORS

Above, we looked at how countries could use databases which aggregate data that is necessary to inform domestic trade policies through augmented intelligence. In international trade negotiations however, augmented intelligence could take this one step further. An international cloud-based resource with information on all international agreements ratified worldwide could inform negotiators on how to best proceed within new trade negotiations.

International commerce is based on national and international agreements and technology has the potential to increase the efficiency of such trade covenants. Databases of international trade agreements could be analyzed by augmented intelligence to inform negotiators on tariffs and barriers to trade, among other things, including international agreements on foreign investments among different countries.

This could be taken a step further to allow negotiators access to national databases. Of course, such information can be accessed – but it can be hard to find and understand. There is already a consolidated information hub in the shape of the UN Comtrade database. This could be expanded upon so as to include more data on international agreements.

However, an international database which includes nations' domestic data on trade could create an incentive for countries to misrepresent certain information. While they cannot mislead other actors about subsidies, they can distort information regarding barriers to trade.

There is already substantial AI technology capable of assisting negotiators. According to Tim Baarslag, a computer scientist at Centrum Wiskunde & Informatica in Amsterdam, “there are negotiation support systems, software that assists humans by suggesting win-win outcomes”. This technology could be adapted in order to select documents that are relevant to trade negotiations.

Small and medium sized technology providers could work on specific

entity designed software to aid in negotiations. For example, a tech firm could focus on creating AI for fisheries negotiations.

One problem is that unless an increasing number of countries have access to this technology, only a handful of nations will be able to enjoy enhanced competitive advantages through AI. Because of the digital divide, LDCs are much further situated from this potential future than developed countries. An organized effort to include all countries in this system would be welcome.

Developed countries could unite efforts to finance the access of LDCs to the cloud. The incentives for this are clear, it would give developed countries access to more data. And the more comprehensive the database is, the more efficient and sustainable it will be for all, including developed countries.

APP TRACK: N2T (NEGOTIATOR TO TRADE)

— Technological Challenges:

It would be necessary to create an international cloud-based database of international agreements that is easily accessible. AI will have to be taught diplomatic and trade negotiating terms as well as WTO rules. The global digital divide would be the biggest challenge. LDCs and some developing countries may not be able to upload data as and trade agreements to a crowd based resource. Nor would they have access to expensive and complex AI technologies.

— Business Challenges:

Some sectors and producers could worry that they may be harmed by AI based negotiations. However, this problem is already inherent in trade negotiations and is not a direct consequence of using AI based resources for trade.

— Regulatory and Diplomatic Challenges:

It will be necessary to make sure that information uploaded to the cloud by individual countries is accurate. The biggest challenge is that more developed countries would have an unfair advantage if they have access to AI technologies in order to negotiate and less developed countries do not.

— **Next steps:**

Multilateral organizations such as the United Nations and the WTO can work to improve their existing trade agreement databases. They can also attempt to make sure that country databases are factually correct. There needs to be a global effort to foster AI technological capabilities in LDCs.

3.4 - M2T (MULTILATERAL TO TRADE). MULTILATERAL TRADE OFFICERS WILL BE ABLE TO WEIGH PROS AND CONS OF ALTERNATIVE SCENARIOS THROUGH AI'S PREDICTIVE POTENTIAL

Augmented intelligence is indeed transforming the way we do business. As Thomas Friedman puts it, we are going from hands (manual work) to heads (intellectual work) to hearts (emotional work).

Today, we are living the transition “from head to heart”. Internet and the big data can now be analyzed by augmented intelligence tools in the light of past human decisions. In a way, augmented intelligence is adding a human touch to big data. Rationality is assisted and leaves more space to decisions based on values.

Where do the multilateral trade officers come in? International organizations – like the WTO – analyze complex, dispersed and international datasets with the goal of creating a more open and fair market. Augmented intelligence, more specifically machine learning, can help to spot the relevant information faster and give a clearer vision of the challenges to tackle.

The work of trade officers will be greatly impacted. Tasks susceptible of automation could be eliminated and more time dedicated to complex activities. In terms of finances, organizations will be able to do more with less – decreasing paperwork, backlogs and costs in general.

For instance, the Georgia Government Transparency and Campaign Finance Commission implemented a handwriting recognition software with crowd sourced human to process about 40,000 pages of campaign finance disclosures per month (many of them handwritten). This is one solution to shows how augmented intelligence will shift human labor to high-value work.



Taking the example of negotiation of tariffs, augmented intelligence can also strengthen negotiation positions as arguments will be backed by better and clearer information. Automated analysis of data allows tracking several years of decisions that can help understanding the roots of other parties' arguments. Negotiation can be faster as objective issues can be solved with more documented information.

Subjective trade discussion on values can thus be brought earlier to the negotiating table. Furthermore, pertinent information selected by augmented intelligence – with tools like Watson and the work of IBM Government and Regulatory Affairs – allows agents to measure the impact of tariffs in this case on our complex interrelated global market.

The benefits of augmented intelligence will foster economies. Multilateral trade officers can play an important role in the access to this technology. Countries lacking resources to implement augmented intelligence might lose the train.

Augmented intelligence is especially important for less developed countries that need to focus on their competitive advantages. In parallel to the efforts of multilateral trade officers in spreading the use of such technologies, investments in broadband infrastructures – such as submarine cables – continue to be of relevance in a truly interconnected world.

Multilateral officers have a hard time making sure the regulation keeps up with markets. Augmented intelligence can improve regulation thanks to fast and intelligent data treatment. The predictive potential of augmented intelligence can even allow regulation to anticipate the markets. Tomorrow, international institutions could even draft regulation according to forecasts. Regulatory frameworks should have a holistic view and thus avoid legal gaps. Now, to include this wider view within regulation, legal texts should be discussed over and over again. Tomorrow, a complex set of variables could be more easily taken into consideration thanks to technology.

However, these innovations will not have a global impact if less developed countries don't have access to augmented intelligence. A universal access to augmented intelligence is required to diminish the gap between countries. That is where multilateral

institutions can be key.

Augmented intelligence will be an accelerator for less developed countries, allowing leapfrogging opportunities. Having this debate is needed to think about tomorrow's multilateral institutions.

Trade will become faster, easier and more global. In a flatter world, multilateral institutions might be in a leading position to create a global market leaving no one aside. The impact of international organizations can be multiplied thanks to augmented intelligence and its implementation in countries' legal frameworks simplified.

APP TRACK: M2T (MULTILATERAL TO TRADE)

— Technological Challenges:

Technology firms will have to identify, select, compile and structure trade-related information such as agreements and statistics. They must also engage with multilateral trade officers who will play the role of curators in developing predictive and modeling applications.

— Business Challenges:

Although multilateral trade-related AI applications carry extraordinary potential benefit to different international players, budget resources to be found at multilateral trade institutions tend to be very limited. This may discourage technology firms from developing such applications as they may not represent immediate business, profit-oriented ventures. Financing by foundations and other globally available not-for-profit R&D funds should be tapped into so as to allow for the development of such applications.

— Regulatory and Diplomatic Challenges:

Establishing common parameters of what is to be considered a “successful” or “fair” outcome of a particular trade negotiation is a major challenge. Achieving uniformity and consensus on what parameters to adopt will not be easy, given nations' different political economy interpretations as to what a “good” trade negotiation result actually mean. The choice of curators tend to be greatly determined by those political economy views — which makes a “balanced” approach to curating multilateral trade-related AI even more challenging.

— Next steps:

Multilateral entities such as the World Trade Organization should be engaged on a series of ‘Design Labs’ with the participation of both technology firms and international development foundations so as to work on a handful of AI prototypes that could help measure potential impacts of ongoing trade negotiations.

3.5 - AI FOCUS POOLS

POOL 1: “AI? HOW ABOUT INFRASTRUCTURE?”

The idea of economic planning dominated the imagination of 20th-century economists. Unlike the classical liberal view, the planning concept supports clear government intervention in the spontaneous course of markets. By implementing one plan or another, the theory goes, governments can speed up a process or correct a wrong course. Plans are a “shortcut” for a set goal.

In the past 70 years, one of the most successful such strategies was the Marshall Plan, launched just after World War II. It helped transform countries defeated in the great conflict, like Germany or Japan, into competitive and prosperous economies.

Today, the phenomenon with the biggest potential for building cooperation bridges internationally, or, on the contrary, to further widen the development gap between countries, is the so-called “Economy 4.0”, a term that — even more perhaps than the designation “Fourth Industrial Revolution” — best describes the ecosystem of knowledge, technology, and entrepreneurship we are now entering.

And, if it’s true that talent, rather than capital, is the determining factor in this new “Age of Adaptation,” as suggested by Klaus Schwab, founder and executive chairman of the World Economic Forum, then it’s perhaps time to talk about a “Marshall Plan for Technology.”

The great gap separating countries is not only to be found in the traditional income-related notion of “haves and have-nots”, but rather between those that are “connected” and the ones that aren’t. The talent-technology fusion allows for “serial adaptations.” Thus the

imperative is to generate productive activity that stretches beyond the traditional comparative advantages of Ricardian economics.

Realistically, it's worth underlining that a new wave of international cooperation for the flourishing of the Economy 4.0 — a task that should be added to the UN's Millennium Development Goals — would be filled with challenges. For instance: What are the implications of the term “infrastructure” for the Economy 4.0? What is the meaning for our time of a new Marshall Plan that would provide IT infrastructure for the developing world?

Conventional infrastructure in the industrial economy was usually represented by the logistics network: ports, airports, railways, roads, etc. Now, the idea of infrastructure should include fast and secure connectivity possibilities, as well as close and agile relations involving universities, research & development units and the translation of their work into market-oriented products.

In this context, rethinking development policies becomes even more complex. The speed at which airports or roads become obsolete is dramatically lower to the pace with which copper wires were surpassed by fiber optics – or fiber optics by the gradual use of satellite technology.

A good example of this premature obsolescence that will have an increasing mark on the Economy 4.0 was the program “One Laptop Per Child” created by Nicholas Negroponte, co-founder of the MIT Media Lab. Since the program began, laptops have been completely overtaken by the rise of tablets and smartphones.

This presents any contemporary concept of a Marshall Plan with a big dilemma. On top of requiring a higher level of international cooperation in a global context that is seeing the world's main powers becoming particularly “individualistic” there's the risk of betting on certain technologies that are incapable of closing the gap between knowledge-based economies and those that still struggle through the early stages of industrial development.

Akio Morita, the legendary founder of Sony, once explained that Japan's success was the result of “hard work and deep waters.” He was referring to Japan's harbors, which favored the transit of big ships loaded with exports of manufactured goods.

The world clearly needs a Marshall Plan for technology, even

AUGMENTED
INTELLIGENCE
– THANKS TO A
FASTER DATA
TREATMENT –
WILL SHORTEN
THE DISTANCE
BETWEEN
SUPPLY AND
DEMAND.

if it means having to deal with the exponential rhythm — and risk — of innovation. But there’s no way out of it. In the Economy 4.0, development can only be the result of “hard work and deep knowledge.”

We should think of a Marshall Plan for technology not as a specific program to be designed, approved and implemented through a decision arising from the UN General Assembly. But we must understand it as a renewed call for international cooperation. In the end, if we fail to shorten digital distances, all countries will lose.


Indeed, new technologies and the sharing economy have been challenging the way we use infrastructure. For instance, in Africa, the boom of mobile networks allowed the continent to be connected without investing in expensive fixed lines. Today, augmented intelligence is a new source of “creative destruction”. For less developed countries, new opportunities of leapfrogging might be materialized.

Augmented intelligence – thanks to a faster data treatment – will shorten the distance between supply and demand. The supply side will be able to spot the consumers’ needs instantaneously and answer to these directly. More companies will be able to access the market - with low need of infrastructure and less intermediaries – namely via platforms.

But our globalized economy will continue to rely on infrastructures for logistics, energy or communication. Augmented intelligence will help to identify underutilized infrastructures and reach a larger range of consumers– including SMEs or individuals. The democratization of the use of infrastructures – thanks to a more transparent market – will allow a better utilization of the existing assets. More efficient use of infrastructures can thus slow down the need to develop infrastructure and bring down the prices for users.

One should look at energy for example. In a market becoming more transparent, a question like “can I use the energy from your solar panels while you are on holiday?” has now an answer. Powerpeers – a Dutch company - is building a sharing economy for the energy market. Augmented intelligence will ease this model by connecting consumers and small energy producers.

Smarter grids will be able to evaluate demand, plan and dispatch



electricity more effectively while integrating a multitude of distributed energy resources like solar panels or electric vehicles and integrate storage systems (batteries) to balance the grid.

According to the firm BDO, “mergers and acquisitions in AI / big data and energy / renewables have shot up from US\$ 500 million to US\$ 3.5 billion from 2016 to Q2 2017. The transformation of the energy sector seems to be on its way.

As per education and health, augmented intelligence can also impact the need of facilities in the sectors of education or health. E-learning already complements universities and schools today. In a near future, augmented intelligence might take an essential role in education, diminishing the need for physical schools and the presence of teachers as known nowadays.

In the health sector, Watson - developed by IBM - is also a complement for doctors to analyze a wide spectrum of information being constantly updated. Tomorrow, services like Watson could be a first filter before going to a medical center or to the hospital. The need of having hospitals near each concentration of population might decrease with the use of Watson and virtual access to medical advice. For less developed countries building an extended network of healthcare facilities might thus be put into question.

AI can bring fast development with less need of investment in infrastructures. Less developed countries can now close the gap with richer countries faster. However, to be part of the fourth industrial revolution, the development of AI should be inclusive. Today, less developed countries lack of access to broadband, or even worst, of access to electricity. Let's remember that in Africa 2/3 of the population does not have access to electricity.

To include all players in the modern global trade, a fast access to augmented intelligence is needed. AI might change the way we use infrastructure but to have a global impact, broadband infrastructure is needed. Access to international infrastructures at a low cost - such as submarine fiber optic cables and inland high-speed interconnection – and competitive markets around these key infrastructures should be fostered by Governments.

Lack of access to broadband can also widen the gap between rural and urban areas – especially in developing countries. In India, a study by IHS Markit, showed that 87% of rural population have

no access or can't afford broadband internet compared with 31 % in urban areas.

APP TRACK: AI? HOW ABOUT INFRASTRUCTURE?

— Technological Challenges

Artificial intelligence will allow us to use infrastructure more efficiently. For that, technological tools and communication bridges should be implemented to connect customers and underutilized infrastructures.

— Business Challenges

Artificial intelligence will be the basis upon which to build new business models for infrastructures will have to adapt in order to deal with a wider range of customers (from B to C to B 2 All).

— Regulatory and Diplomatic Challenges

In order to allow for the implementation of artificial intelligence, Governments should create the framework to provide increased access at low cost to international infrastructures such as submarine fibre optic cables and inland high-speed interconnection – and create competitive markets around these key infrastructures.

Once the infrastructure needed for the technological reform are implemented, the legislator should rethink the way business models for infrastructures were conceived. Infrastructures were often dedicated to a specific use and for specific clients (energy or ports are example of exclusive B to B).

— Next Steps

The priority, especially for LDCs, is to enhance access to energy and to the Internet. Then, at both national and international levels, sectorial meetings should foster for the debate between regulators and corporate players to rethink the business model of infrastructures. Multilateral organizations could have a leading role in bringing more agility and competitiveness to the use of infrastructure.

POOL 2: "AI CURATORS ARE KING. HOW TO SELECT THEM?"

The digital divide will have an impact when selecting AI curators. Though LDCs have made advancements in access to technology, according to the International Telecommunication Union, 800 million people in the LDCs remain offline and by 2020, less than 1 out of 4 people in LDCs will be using the Internet.

Furthermore, around the world, there tends to be gender disparity in fields of technology, with most countries having a higher proportion of men who use the internet than women. The result is that men from the Global North will most likely be programming AI technologies. This will lead to imbalances that countries should strive to correct from the get-go.

During the panel launch of the Intelligent Tech & Trade Initiative (ITTI) at the WTO Public Forum in Geneva in September 2017, Dr. Marion Jansen, Chief-Economist of the International Trade Center, pointed out that if some social groups are excluded from the development of these technologies, this could have an impact on neutrality. She used the example of purchasing a car to highlight her point.

When buying a car, a woman might be more concerned with whether the car has child safety features than with how fast the car is able to gain speed. The suggestion is that cars designed by men may not represent certain concerns that women might have. Similarly, technologies designed from the perspective of developed countries may not consider certain concerns that developing countries might have.

During the same panel, Professor Jacques Marcovitch of the University of São Paulo highlighted the issue of values embedded in AI technologies. Should cloud-based resources such as the ones suggested in earlier sections of this Discussion Paper come to fruition, AI technologies used to analyze the data would have to be embedded with values focused on promoting the Sustainable Development Goals, complying with WTO rules and fostering inclusive growth.

In order to counter these issues, one potential solution would be to involve multilateral institutions such as the WTO and the United Nations in the selection process for AI curators.

Multilateral institutions could help shape these new tools in order to ensure that neutrality will be a priority.

3.6 - INTELLIGENT TRADE AND TECHNOLOGIES: PREPARING FOR THE TRADE FACILITATION OF THE FUTURE

BY **JAN HOFFMAN**,
CHIEF OF TRADE LOGISTICS BRANCH, UNCTAD

The mindset

When the negotiations on trade facilitation started at the WTO in 2004, many developing countries' negotiators were reluctant to commit to the publication of information on the internet. Developing countries lagged the capacity, they said, and such publication implied costly IT capacities. One decade later, when the negotiations were concluded, this was much less of an issue. In fact, it can today be argued that publication on the internet is of particular interest to smaller traders from poorer countries, because only like this they can have access to relevant information for their imports and exports. Larger companies from richer countries are more likely to have the option to obtain the relevant information through their own offices or their countries' diplomatic representations in foreign markets.

Currently, the manual for the FAL convention of the International Maritime Organization (IMO) is being revised. References to the electronic submission of data are being deleted – not because data should not be transmitted electronically, but rather because alternative transmissions are not even considered any longer.

Regulations and international agreements for international trade need to keep pace with technological developments.

Negotiations, ratification and implementation of conventions take time, and in view of today's fast paced technological change, the aim should be to commit to the use of whatever is the most appropriate technology.

Solutions to today's requirements

The following Articles of the WTO Trade Facilitation Agreement can probably benefit the most from further technological developments:

- Article 1 concerns “publication and availability of information”. Access to information has to be complete and immediate, be it through the internet or other – future – technologies that allow for sharing and obtaining information.
- Article 2, on the “opportunity to comment, information before entry into force, and consultations”, will benefit from access to information and from technologies that allow concerned stakeholders to communicate and to provide views and comments. By the same token, Articles 5, 7 and 8 of the TFA include the need for communication and publication which can benefit from information and communication technologies.
- Most provisions related to licences, declarations and clearance will benefit from information and communication technologies that provide solutions to data transmissions, automation, payments, classification, and the transfer of access rights. These include above all the provisions within Article 7 on the “release and clearance of goods” and Article 10 on “formalities connected with importation, exportation and transit”.
- Finally, Articles 7 and 10 contain a number of provisions that can benefit from data analysis, and as such also from Augmented Intelligence (AI). Among the specific measures where AI could be applied are risk management, separation of release from clearance, audits, authorized operators, and the analysis of release times beyond the simple “average” that needs to be published.

Solutions to tomorrow’s requirements

In 100 years from now, the whole concept of “copies” versus “originals” as per Article 10.2 will become irrelevant, once processes focus on data rather than on documents. And once we focus on data and information on a distributed ledger, the reference to the use of “information technology to support the single window” will become obsolete.

In the long term, I believe that WTO TFA Article 10.1 will gain in importance, as it does not prescribe any specific technological solution, but rather provides for a dynamic dimension of the TFA. In 100 years from now many specific provisions will have become obsolete and we will just want to minimize “the incidence and

complexity of import, export, and transit formalities”; continuously “review” requirements; keep “reducing the time and cost of compliance for traders and operators”; and always choose “the least trade restrictive measure”. For these endeavours, AI and blockchain solutions will likely be relevant for decades to come.

In the longer term, I see three main concerns and opportunities for future action and applications of the latest and still to be invented technologies:

- *E-Commerce*: Beyond the TFA, already at the WTO Ministerial Conference MC11, the multilateral negotiating agenda may be moving toward electronic commerce. The eTrade for all initiative is an important practical step to support the ability of more developing countries to engage in and benefit from E-Commerce. Its modules include issues such as trade logistics and ICT infrastructure and services.
- *Networks*: The focus of trade and trade logistics will be more and more on the analysis of networks. What matters is a country’s or trader’s connectivity, i.e. the position and role within in a network. At borders and ports, trucks and ships should arrive and leave Just In Time (JIT), thanks to the Internet of Things and AI. An important initiative in this context is the Global Infrastructure Connectivity Alliance (GICA).
- *Energy*: There are concerns that distributed ledgers used for blockchains require far more electricity than more basic, traditional IT solutions. At the same time, alternative blockchain processes requiring less computing power and electricity are under development. In addition, blockchain solutions can also be applied to the energy sector itself, where the technology can help save energy by increasing the efficiency of electrical grids and allowing local energy sharing.

Science Fiction?

Decisions about the above-mentioned technologies will in the future be prepared and possibly even taken by AI. AI systems will learn and adapt faster to new challenges and technologies than humans, as newly acquired knowledge can immediately be passed on to fellow AI-endowed units – no need for schools, seminars and teaching here.

It will become increasingly important that AI systems be taught a set of values upon which to base their learning and decisions. By way of example,

already today, self-driving cars need to be taught to base decisions on pre-defined criteria – that so far are still set by their human creators.

Back to basics

Many challenges remain. The use of the Internet is still not ubiquitous, especially in many Least Developed Countries (LDCs) and remote and rural areas. In LDCs only 1 in 6 people use the Internet, and small businesses use the Internet far less than larger enterprises. UNCTAD member states attach a high priority to ICT connectivity as critical infrastructure, as well as to capacity building for the smaller and weaker economies.

At UNCTAD, we work with developing countries and other international organizations on solutions that help facilitate trade and its transport, supporting customs administration, port authorities, national trade facilitation committees, and transport corridors. We provide technical assistance and capacity development for those who may otherwise be left out.

As humanity moves towards ever more integration through intelligent trade and information networks, we must do both: seize the opportunities of new technologies for improved trade efficiency, and at the same ensure that nobody is left behind.

3.7 - SMART TRADE MULTILATERALISM

BY **ALVARO CEDEÑO MOLINARI,**
AMBASSADOR OF COSTA RICA AT THE
WORLD TRADE ORGANIZATION

The multilateral trading system was created with the purpose to make global trade smooth, predictable, fair and sustainable. Unfortunately, in the 22 years of existence of the World Trade Organization, much of the promise of its creation has not materialized into concrete multilateral agreements. Negotiations have been intense, technical knowledge has grown vastly and capacity building trade policy has become virtually global. Much of the progress that trade has had the last quarter of a century has been the result of bilateral, regional or

plurilateral agreements and not the result of multilateralism.

Since 2001, the WTO has spent 14 years negotiating the Doha Development Round and at least the last two debating whether to carry on with Doha issues or to move onto new ones. Meanwhile, the world has changed dramatically, mainly due to technological progress. The acceleration of microprocessing and memory storage capacity and Internet connectivity speed has been particularly dramatic the last ten years since the ascension of the smart phone. Yet, trade policy is still being negotiated in a rudimentary and widely ineffective manner.

In order to infuse trade negotiations with some of the dynamics of the aforementioned accelerations, the WTO must change gears and become digitized too. From my point of view, a way forward would be to embrace the application of digital technologies that could accelerate the application of simulations of international trade and trade negotiations that could render results that would serve as evidence and metrics at the service of decision- and policy-makers. Think of it as smart governance, in the same way governance became smarter when it embraced computer software tools like electronic spreadsheets, word processors or electronic email.

Simulations could eventually lead the institution to the adoption of artificial intelligence (AI) as a resource to employ self-generated data which would help visualize causes and consequences of extraction of raw materials, production, manufacturing, shipping, exports and imports, consumption and disposal of goods. Such tools could help trade policy operators around the world to comprehend more easily negative externalities like the carbon emissions embedded in trade, leading to the solution of a problem of growing concern as climate change.

Moreover, AI, could assist the migration to electronic commerce allowing producers and consumers around the world to not only meet virtually in the digital marketplace but also know in real time or in advance what the demand for a particular good or service may be. Doing this would mean that one-size-fits-all manufacturing would give way to a more efficient design-and-order-it-yourself system which, combined with 3-D printing, could mean a profound disruption to production and consumption of goods and services across most if not all industries.

This scenario could then be linked to a variety of cryptocurrencies (CCs) that would be designed to fit the needs of different industries.

For example, tourism would have a CC that is very versatile in multilingual environments allowing transactions of people that are planning to visit a country whose language they ignore, without requiring the intermediation of operators that today add to the cost of translating a purchase into an actual exotic experience somewhere in the world. Additionally, CCs could interact across industries and behave autonomously as a source of investment. Also, it would be AI that would identify the most critical areas to invest in order to generate profit and purpose while preserving people and planet, free of political intervention in the decision-making processes.

Imagine investment decisions that would channel funds into priority needs of least developed countries (LDCs). Infrastructural problems would be dealt with by AI, which would know where investment is most critical for human and economic development. Of course, this would require a great deal of trust among trading partners, a great deal of transparency in order to allow the most updated information to be the basis of those decisions, and domestic and international regulatory frameworks synchronized seamlessly to enable such frictionless trade.

Precisely, the promise of cyberspace is to create a commons designed as a public good where trade can be frictionless and smooth, the way trade was conceived in the world of bricks and mortar we know today. This will require, at least, a functional balance between trust and cybersecurity, between the digital economy and climate change, and between public and private initiatives.

Some might feel that this quasi-fictional scenario is unlikely to happen, or even undesirable. Others could think it is very distant into the future. As always, with technology, disruptions are giant waves nobody saw coming. Pretty much all technologies that have been mentioned above have already reached a level of maturity enough to be considered widespread and reliable in order to deliver scenarios like these.

There are two predominant choices to make at this juncture: the first one is to do nothing and wait until these technologies disrupt trade as it is known today; the second one is to be proactive and explore which tools are already out there that could have a demonstrative effect on the role that AI in particular, and digital technologies in general, could have on trade.

It could be that the next ten years will be shaped by a technology that

will be launched next year. Or it could be that it will be shaped by CCs, which have the versatility and power to disrupt the banking system, worth several trillion dollars per year. More importantly, this particular disruption could have the potential of solving billion-people problems around the world in a relatively short time. This means that trade, with the proper leadership and the proper tools, could be the force of good promised one generation ago.

In conclusion, the multilateral trading system has, within its reach, a paradigm shift that would merge together the trade, digital, environmental and development agendas in one single move. A pilot project is all it takes to persuade trade policy operators of the costs and benefits of this adaptation to the technological era of 2017. •



4] KEY DISCUSSION PAPER FINDINGS

- Within five years, all major trade decisions will be enhanced by cognitive technologies.
- In trade finance, blockchain might be a tool that could make global markets more accessible at a moment when they seem to be closing off.
- Blockchain represents an increased level of confidence and it will exponentiate international trade transactions.
- Trade-related counterfeiting, smuggling and piracy may be dealt a major blow as blockchain improves guarantees of origin and provenance of products.
- The impact of blockchain technology is only possible if the quality of data input is ensured.

- Blockchain protocols used to secure the ledger of global trade and manufacturers must be trusted by all of its users and be effectively unhackable.
- Blockchain will boost Payments and Financing instruments for international trade as well as expand access for companies and consumers to investment and credit ecosystems.
- Productivity will soar as technology is used to fine-tune various elements in the value chain.
- AI can be increasingly used to predict and model international trade negotiations.
- Traditional notions associated with big firms and their economies of scale may be less influential in determining business success as AI may help level the playing field for SMEs.
- AI can enhance nations' capacities to make trade-related decisions and therefore allow them to better explore and expand their competitive advantages.
- Trade negotiators can use AI tools to easy and structured access to cloud-based resources and therefore be better equipped to represent their countries' interests.
- Multilateral trade officers will be able to weigh pros and cons of alternative scenarios through AI's predictive potential.
- Technology companies will need to have expanded access to structured data sources in the trade world in order to develop trade-related MVPs (minimum viable products).
- AI will have to be taught diplomatic and trade negotiating terms as well as WTO rules. •

REFERENCES & SUGGESTED READINGS

(1) An earlier version of this text appeared in *Frontiers: Exploring the Digital Future of Management*, (“Digital Today, Cognitive Tomorrow” - MIT Sloan Management Review Special Collection, 2016)

(2) An earlier version of this text appeared in the *Foreign Affairs* website (“How Blockchain Could Shape International Trade” - Snapshot, August 16, 2017)

(3) An earlier version of this text appeared in the *World Economic Forum* website (“How Blockchain can restore trust in trade” - February 1, 2017)

“Appcenter - Listing”. Concur.Com, 2017. <https://www.concur.com/app-center/listings/578fc51ab2a11e130065b828>.

Arlen, Gary. “Blockchain Technology Moving Into Cable, Advertising Sectors”. Multichannel News, 2017. <http://www.multichannel.com/blog/i-was-saying/blockchain-technology-moving-cable-advertising-sectors/416118>.

Booty, Letitia. “Augmented Intelligence Tech Excites SMEs More Than Large Corporates”. Real Business, 2017. <https://realbusiness.co.uk/scale-up-hub/2017/09/14/augmented-intelligence-tech-excites-smes-large-corporates>.

Commonwealth Partnership for Technology Management (CPTM). “Adaptive Flexibility Approaches To Financial Inclusion In A Digital Age - Recommendations And Proposals”. Reprint, London, 2016.

http://www.cptm.org/documents/CFMM_Brief_%202016.pdf.

Haaramo, Eeva. “Swedish Land Registry Is Trying Out Blockchain as a Means Of Proving Ownership”. Computer Weekly, 2017. <http://www.computerweekly.com/news/450421958/Sweden-trials-blockchain-for-land-registry-management>.

Howell, David. “How Augmented Intelligence Could Transform Your Business”. Techradar, 2017. <http://www.techradar.com/news/world-of-tech/how-augmented-intelligence-could-transform-your-business-1316187/2>.

Hutson, Matthew. “How Augmented Intelligence Could Negotiate Better Deals For Humans”. Science Magazine, 2017. <http://www.sciencemag.org/news/2017/09/how-augmented-intelligence-could-negotiate-better-deals-humans>.

“IBM Regulatory Compliance Analytics With Watson - Overview – United States”. Ibm.Com, 2017. <https://www.ibm.com/us-en/marketplace/regulatory-compliance-management>.

International Telecommunication Union. “Achieving Universal and Affordable Internet In The Least Developed Countries – Executive Summary”. ICTs LDCs and the SDGs, 2017. https://www.itu.int/en/ITU-D/LDCs/Documents/Draft_%20ITU_%20ICT4SDG_LDC_summary.pdf.

“Tradeoff Analytics | IBM Watson Developer Cloud”. Ibm.Com, 2017. <https://www.ibm.com/watson/developercloud/tradeoff-analytics.html>.

“Using Tech To Improve Lives In The World’S Least-Developed Regions”.

ITU News, 2017. <http://news.itu.int/using-tech-improve-lives-worlds-least-developed-regions>.

“WTO | Understanding The WTO - Principles Of The Trading System”.

Wto.Org, 2017. https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm.



BUILDING ITTI



Realized by:



Sponsors:



Rua Surubim, 504
12th floor
Brooklin, São Paulo (SP)
+55 (11) 3040-8832

itti@itti-global.org

<http://itti-global.org>