The trade digitalization imperative in metals and mining supply chains

Metals and Mining Digitalization Forum

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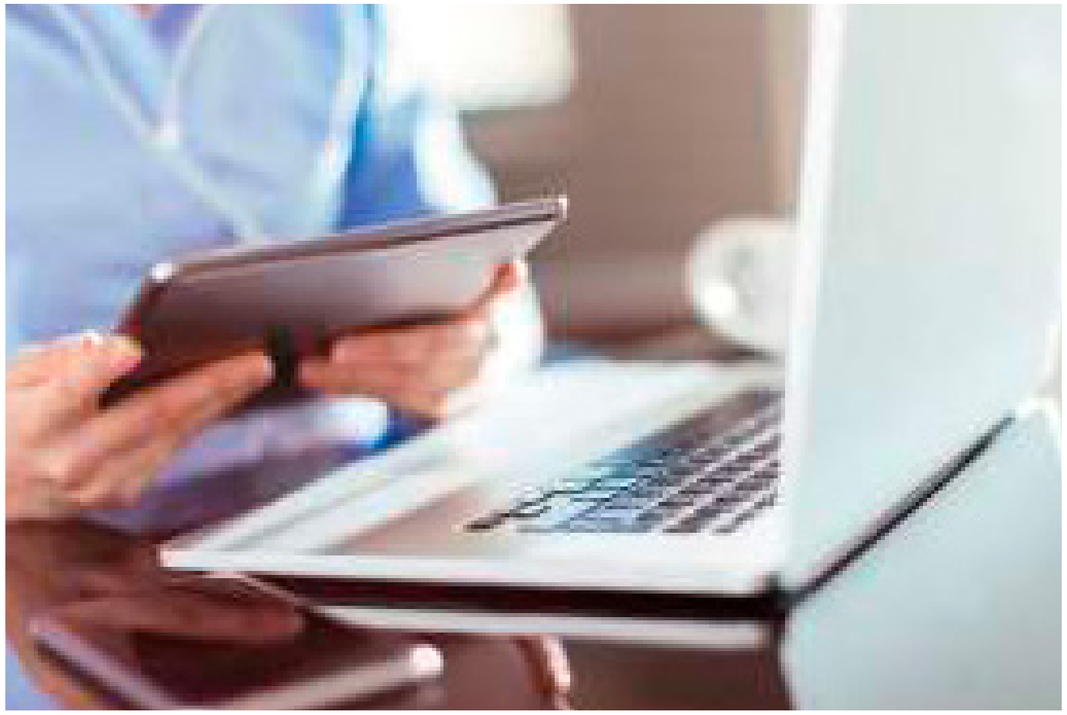
Introduction

Following years of incremental improvements, the events of recent years have driven enormous progress towards creating the digital trade ecosystem of the future. However, there is still a long way to go.



Depending on the commodity, the trade route, and the counterparties involved, a single trade transaction in the metals and mining sector can require anything from 10 to 40 documents, each of which must be processed manually to go from the supplier to the ultimate buyer at destination, often through multiple intermediaries.

According to a recent case study by digital trade platform MineHub, fulfilling one monthly order from a copper producer to an end-buyer involved teams across four continents, eight different logistics providers, 34 days on the water, four ocean shipments, 200 truck shipments and 216 documents.

These manual paper-based processes are a source of cost, delay, error, inefficiency, and risk. One research report shows that these inefficiencies contribute to a staggering $507 billion of working capital trapped in S & P 1500 supply chains alone. However, legal uncertainty, interoperability of various platforms and the lack of comprehensive standards are all barriers and challenges that the industry needs to tackle.

According to an International Chamber of Commerce (ICC) report – G7 - Creating a Modern Digital Trade Ecosystem: Cutting the cost and complexity of Trade an estimated 4 billion trade documents are in circulation. If stacked on each other, the documents would be 520,000 meters high and constitute approximately half a million trees. Paperless trade reduces the carbon footprint of trade and promotes more sustainable working practices.

Digitalization enables information to move seamlessly across borders and between stakeholders, from buyers to sellers, financiers, insurers, shippers, logistics and customs, and is expected not only cut the cost of doing trade, but create new opportunities to do more with the data that is produced – from tracking the provenance of commodities to ensuring the resilience of supply chains to future risks.

Global events such as the Covid-19 pandemic and the disruption of shipping and supply chains due to lockdowns, lost paper documents and errors clearly highlight the need for change. Currently, letters of indemnity are used to circumvent missing paperwork, delayed paperwork etc. which introduces additional risk and cost. All this only serves to underscore the urgency of progressing a digital agenda.

Numerous parties in the global trade ecosystem – from technology providers to banks and fintechs, standards-setting bodies, regulators and industry organisations – are developing encouraging solutions and innovations that, if adopted worldwide, will usher in the future digital state of trade. However, the current state of the market is one of fragmented initiatives, and there are many barriers to overcome before end-to-end digital trade becomes a reality. This has been recognised within the industry as a key barrier and one that needs to be resolved.

The metals and mining industry provides the foundations for modern living, innovation and engineering achievements. With supply chains spanning the globe and customers in every major industry vertical – from transportation to technology, the construction of roads and hospitals, and the generation of electricity - developments such as better connectivity, greater visibility and efficiency gains in the metals and mining industry can have an important multiplier effect.

The challenges to trade digitalization that the metals and mining sector faces are not occurring within an industry vacuum. Nonetheless, there are certain challenges that are unique to the sector.

In this position paper, the Metals and Mining Digitalization Forum (MMDF) aims to engage all parties involved in the digitalization of trade – from solution providers to legislators – in a collaborative initiative to break down the barriers to a digital future. The paper outlines the progress made thus far in digitalising metals and mining trade, highlights the barriers its members are facing in achieving full end-to-end digitalization, and describes the enormous benefits to the industry, and by extension the global economy, that can be attained if trade digitalization is achieved.

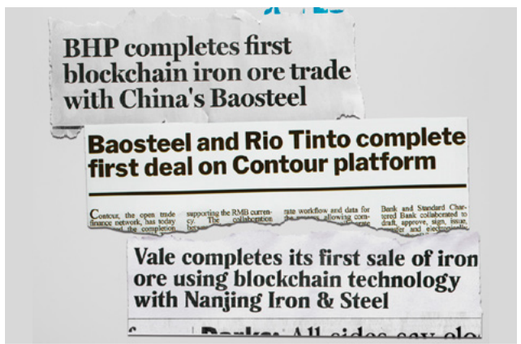
About the Metals and Mining Digitalization Forum

The MMDF is a working group that was jointly founded by Anglo American, BHP, Rio Tinto and Vale.

It seeks a transition from a paper-based and inefficient ecosystem to one that is digital, transparent and verified for buyers, sellers, banks, vessel operators and other value chain participants. MMDF's mission is to propose solutions and assist with the adoption of interoperable digital technologies across the metals and mining supply chain to increase efficiency, transparency, and security and deliver value for all industry participants.

Through this mission, we believe the industry can realize greater simplification, productivity and transparency across the supply chain for all participants.

Over the past decade, each of the founding members of the MMDF has invested in digital transformation within mining processes, operations and supply chains. At the forefront of trade digitalization, the founding members have carried out landmark digital-first transactions.


BHP completes first blockchain iron ore trade with China's Baosteel

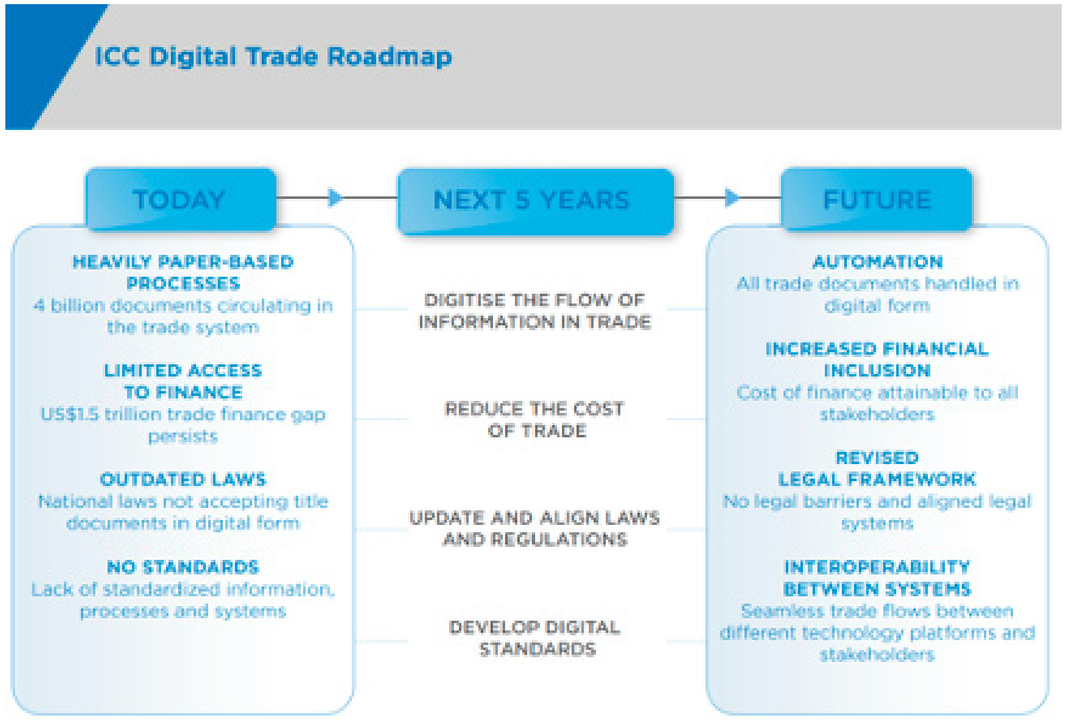
Baosteel and Rio Tinto complete first deal on Contour platform

Vale completes its first sale of iron ore using blockchain technology with Nanjing Iron & Steel

However, one of the critical elements to unlocking digital transformation is the ability to collaborate within the broader ecosystem as well. Numerous barriers still exist to trade digitalization, among them a lack of coherent standards, legal uncertainty regarding the acceptance of digital trade documentation, and unclear standards regarding integrations with blockchain and non-blockchain based initiatives. By working together as an industry, the MMDF aims to bring forth the next wave of digitalization at speed, drawing on insights and synergies from all stakeholders to advocate for a conducive environment and greater adoption of digital tools.

The group is focusing on numerous workstreams including sharing insights, showcasing best practice, and engaging industry, policymakers, financiers and solution providers with the aim of realising the full potential of trade digitalization. Beyond its founding members, the forum plans to welcome like-minded stakeholders within the global metals and mining trade ecosystem.

Where are we now? The status of digitalization in the metals and mining trade ecosystem



Reproduced with permission from the International Chamber of Commerce report G7|Creating a modern digital trade ecosystem

Over the last two decades, several initiatives have emerged aiming to replace commonly difficult paper-based trade documentation processes – namely drafting, approving, signing, issuing, transferring and presenting bills of lading and supporting documents. However, most metal and minerals transactions are still executed using a combination of disparate electronic systems and paper.

As the industry works to improve the security, efficiency and transparency of cross-border commodity trade, it has achieved notable successes in streamlining and automating these processes.

An area of initial focus is the Electronic Bill of Lading (eBL). The Bill of Lading (BL) has three main functions: it provides evidence of the agreement between the shipper and carrier for the movement of cargo, it is a receipt for the goods, and it is a document of title to the goods. If an original bill of lading is lost, delayed, or stolen, the recipient cannot take possession of the goods, and with around 90% of traded goods being carried over the waves, the eBL has far-reaching positive impacts.

Securing industry acceptance of the eBL is a necessary first step but it is important to also recognise that the data used in an eBL is used multiple times in a global transaction. This makes it important for the industry to standardise data so it can be seamlessly shared across documentation, processes and organisations.

MMDF members report that between 15% and 30% of their trade documentations within iron ore are now fully digitalized end-to-end

One area that has gained some traction for eBLs is in the iron ore trade. As a key metal for human development with the huge volume of iron ore trade happening globally, it is a natural area of focus for trade digitalization. MMDF members report that between 15% and 30% of their trade documentations within iron ore are now fully digitalized end-to-end, as a result of a considerable effort from the industry to bring along all stakeholders on the trade digitalization journey.

Based on information provided by MMDF members and consolidated by the Baltic and International Maritime Council (BIMCO), together, MMDF members account for around 1 billion tonnes of iron ore shipped on average per year. Between 2021 and 2022, these leading mining companies increased the amount of iron ore carried on eBLs by 80% - equivalent to 100 million tonnes of cargo. eBLs now account for more than 20% of their annual trade volumes for iron ore. The direct benefit for these four leading producers is a reduction in risks that are prevalent in the paper world which could amount to billions of dollars, such as fraud and in some cases letter of indemnity exposure.

“These companies have all shown clear leadership and a lot of work is behind these encouraging figures. Earlier this year we launched the 25 by 25 pledge where shippers commit to target moving at least 25% of at least one commodity on eBLs by 2025. The four companies have all signed up to the pledge – a testament to their resolve to digitalise the end-to-end global trade process.” commented Grant Hunter, Director, Standards, Innovation and Research at BIMCO.

“Through collaboration, we can connect the dots between previously siloed data, allowing for fully integrated digital transactions from contract negotiation up to financing and execution. This dramatically reduces the time spent on manual processes, freeing up resources and unlocking value,” says Michel Alves, Commercial Services Manager Pacific at Rio Tinto.

“Through these transactions, we have proven that digitalization is possible. We now need to reach global scale, and this can only be achieved by everyone coming together.”

With stakeholders spanning the globe, inputs into every sector – from electronics to construction to transportation – and linkages to third-party service providers in both emerging and developed markets, more efficient and resilient metals and mining supply chains will have an impactful multiplier effect. However obstacles to progress must be removed in order to close the gap from where we are now to achieve the full digitalization of trade.

Cross-industry cooperation will be vital to achieving this. Some initiatives already underway include the Future International Trade Alliance, which brings together the ICC, Digital Container Shipping Association (DCSA), BIMCO, International Federation of Freight Forwarders Associations (FIATA) and Swift, to collaborate on the development and adoption of relevant standards to facilitate the use of eBLs.

Meanwhile, the ICC’s Digital Standards Initiative (DSI), which is working to drive alignment and adoption of digital standards and interoperable data across the entire trade ecosystem, has developed a broad industry advisory board with cross-regional and cross-industry representation, bringing together leaders with diverse backgrounds and experiences who share a passion for solving key challenges facing trade digitalization efforts.

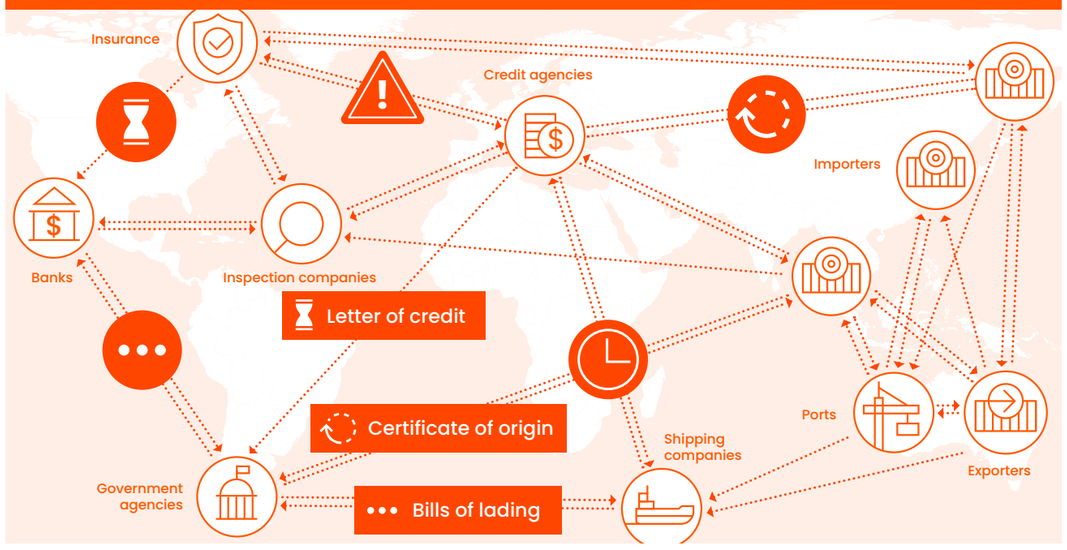
The size and scope of mining value chains requires a similar collaborative approach focused on the mining value chains. The MMDF aims to bring together like-minded participants from mine to market, to collaborate on the adoption of digital tools and identify the barriers to digitalization.

“One of the main reasons for creating the MMDF working group is that everyone in the industry has common pain points,” says Laure Baratgin, Head of Commercial Operations at Rio Tinto. “Finding a collective resolution for these shared issues is key to overcoming the barriers.”

A critical mass success story

Since the first-ever fully integrated paperless trade was carried out for iron ore in 2019 by Rio Tinto and Cargill in collaboration with Chinsay, Voltron, ICE Digital Trade (formerly essDOCS), R3 Corda, HSBC, and BNP Paribas, reducing contract issuance time by almost 98%, digital trade in this commodity is nearing critical mass, with a growing number of iron ore transactions now carried out digitally.

The current complexity that exists in a paper-based transaction



Digitalization will go a long way towards removing complexity and risk

Despite the iron ore supply chain comprising large networks of stakeholders including shipping, customs, freight forwarders and couriers across multiple geographies, the metals and mining industry has been able to achieve this success thanks to its position at the centre of the wider ecosystem.

“Our customers have been willing to do this with us, and we’ve been able to target it and build it into our contracts with them,” says Rebecca Hall, Manager, Sales & Marketing Excellence, at BHP.

“When we started to look at and discuss the various mega trends with customers, digitalization came up with them as well,” says Demian Reed, Head of Sales Operations (Global) Marketing at Anglo American. "When it comes to adoption, the big steel mills are ready to do this with us. We’ve had successes and it's going well.

It is then crucial to bring on board those in between, such as shipowners, banks and countries. Our approach has been to align to our customers to try to bring everyone along with us.” he continued.

“Vale is making a lot of effort to digitize our operations both internally and externally. We have been pushing this agenda heavily since 2013. Internally, we have KPIs distributed among several departments to make sure we increase digitalization across all operations. Externally, today, around 30% of our export volume is already end-to-end digitalized. Digitalization has helped us optimize our internal operations and become a pioneer of the industry. On top of that, digitalization has allowed us to further improve our customer service to better meet their demands.” says Erick Tavares, Sales Manager - Iron Ore Spot Desk at Vale.

Why digitalization matters

Much has been written about the economic benefits of trade digitalization. According to a report by the ICC[1], trade across the G7 could increase by US$9tn in the next five years via the full digitalization of the trade ecosystem, resulting in an average 84% reduction in trade cost across the G7+ by 2026.

In the metals and mining sector, digital transformation is estimated to generate US$77bn of value through the integration of technologies that enable better data exchange amongst participants

In the metals and mining sector, according to a World Economic Forum analysis[2], digital transformation is estimated to generate more than US$320bn of value by the middle of this decade, including US$77bn through the integration of technologies that enable better data exchange amongst participants.

But the benefits of digitalization go beyond a simple bottom-line impact.

Risk reduction

Over the past few years, Covid-19 exposed global supply chain frailties, laying bare the systematic weaknesses of paper-based trade.

But even prior to the pandemic, manual documentary processes have long been a source of risk and delay. On short sea lanes, ships often travel faster than the paperwork which means goods cannot be cleared. And when the paperwork does arrive, should there be errors, it will mean additional delays. On longer journeys, while documents might arrive on time, human errors can mean they are incomplete or erroneous, again leading to delays and frustrations.

Failure to present a bill of lading could result in the goods not being handed over to the importer, while exporters face the possibility that the paperwork necessary to authorise the payment is delayed, particularly if a transaction is being settled under letter of credit terms.

Digitalization will reduce operational risk; and increase operational efficiencies and controls.

“Risk mitigation is a big driver for us. Documents can always be lost along the way, causing difficulties in getting documents to the issuing bank,” says Alves. “Electronic documents mean we can complete a process that would before have taken 30 days, to an hour, and we reduce the need for time-consuming letters of indemnity that create credit risk.”

“Electronic documents are safer than paper documents considering that there’s no risk of them going missing.” says Tavares, “Digitalization can also help avoid supply chain disruption due to any number of issues, thus contributing to resilient and stable industrial and supply chains.”

Numerous recent high-profile fraud cases within the wider commodities sector have also served to underscore the use case of electronic documents.

“The wider commodities sector has been vulnerable to fraud. In a digitalized world, this risk becomes much lower,” says Manish Naik, Head of Digital in Marketing, Anglo American.

With digitalization comes greater visibility.

More transparent minerals supply chains can also give greater assurance to trade financiers, who, because of high due diligence requirements and scrutiny, are increasingly risk-averse when it comes to financing exports from certain geographies. This increased comfort can translate to greater access to finance for smaller participants within the sector, paving the way for a more inclusive future of trade.

More transparent and sustainable supply chains

Increasingly, customers, governments, civil society organisations and consumers are seeking to purchase goods that have been produced in socially and environmentally responsible ways.

MMDF members are committed to ethical business practices that support sustainable development and are harnessing innovations such as precision mining technologies and data analytics to help ensure that minerals and metals are produced responsibly and can be used safely.

For many mining companies, particularly those that are going above and beyond expectations in the ESG field and wish to seek to differentiate themselves, trade digitalization provides an exciting opportunity to reliably collect, access and share relevant data about their products to demonstrate their environmental and ethical credentials and help make supply chains more transparent with the potential of reaching all the way to end users.

“Digital trade processes provide the rails upon which this information can flow,” says Judy van Heukelem, Manager, Supply Chain Emissions, Tracking and Reporting at BHP. “Whether it’s tagging transactions with scope 1 and scope 2 emissions data or providing traceability information, we believe that trade digitalization will enable us to provide evidence of our ESG performance with greater confidence.”

Greater transparency can also empower all participants to be more agile and flexible, making decisions guided by real time information. This has the added advantage of leveraging a diverse workforce across geographies to support the vulnerability and volatility in supply chains.

The impact of this stretches along the entire value chain: buyers can satisfy environmental product reporting requirements, while end users can become better-informed, driving demand for more goods with relatively stronger ESG credentials.

[1] https://cdn.shopify.com/s/files/1/2992/1976/files/ICC-G7-Creating-Modern-Digital-Trade-Ecosystem.pdf?v=1634736119

[2] https://www.dsi.iccwbo.org/_files/ugd/0b6be5_c8f1719de362441f8277fcdf49240d86.pdf?index=true

More transparent and sustainable supply chains

One such example is Rio Tinto's START, a 'nutrition label' that captures the sustainability and provenance credentials of their materials. Using secure blockchain technology, START provides key information about where and how materials were produced with fourteen criteria covered under the three pillars of People (tracking safety performance, contribution to communities, third-party assessment), Planet (tracking global warming potential, water management, waste management, energy (electricity) source, air emissions, biodiversity, land management, recycled content) and Progress (tracking ethics & compliance training, whistleblowing programme and diversity). START helps customers meet the demand from consumers for transparency on where and how the products they purchase are made. It also empowers end-users to make informed choices about the products they buy, enabling them to contribute to a sustainable future, and to differentiate between end products based on their environmental, social and governance credentials.

Digital tools can also be used to improve visibility and trust within the metals and mining industry.

Anglo American launched Valutrax™ in November 2023, a proprietary digital traceability and transparency solution. Built on blockchain, it provides users with a single point of access for a shipment's core information and sustainability indicators, in a secure and easy-to-access way. This allows for tracing of metals and minerals from source to customer. Valutrax™ is currently available to Anglo American's customers purchasing ferronickel, copper concentrates and iron ore mined products, with plans underway to integrate other products in future.

Tracr, a diamond blockchain initiative launched by De Beers, the diamonds subsidiary of Anglo American, provides a comprehensive mine-to-customer traceability solution for natural diamonds to source while creating a secure record which includes both its provenance and certifications such as grading and inscription reports. It gives consumers enhanced confidence in their diamond's origin and impact, as well as enhance efficiencies across the diamond value chain.

"The ability to provide visibility into the sustainability performance of mining companies will be fundamental to shape a sustainable business for the future. We have ambitious sustainability goals, and trade digitalization is one of the enablers to demonstrate our progress across the value chain in a safe, accurate and timely manner," says Reed.

Tracking carbon emissions through the iron ore value chain

In 2020, BHP signed a memorandum of understanding with world leading steel producer, China Baowu, with the intention to invest up to US$35mn and share technical knowledge to help address the challenge of reducing greenhouse gas emissions facing the global steel industry.

In May of the same year, BHP and China Baowu completed their first iron ore trade on the MineHub blockchain-based platform, which allows parties involved in selling, buying, delivering and paying for a cargo of minerals to collaborate securely in real-time, sharing electronic information rather than couriering or emailing documents.

Trade confirmation, logistics, assay exchange, notifications and document sharing were all carried out via MineHub. Blockchain gave the relevant parties real-time visibility of the shipment and traceability of the supply, while also enabling the reporting of carbon emissions through the iron ore value chain.

End-to-end sustainability monitoring

In 2021, BHP and US copper cable and wire manufacturer Southwire completed their first 'carbon neutral' copper transaction involving delivery from BHP's mines in Chile to Southwire's processing activities in Georgia, United States.

The pilot involved tracing BHP copper cathodes and associated greenhouse gas emissions through Southwire's rod production operations utilising supply chain traceability provider Circulor's blockchain-based technology and BHP's carbon offsetting capabilities.

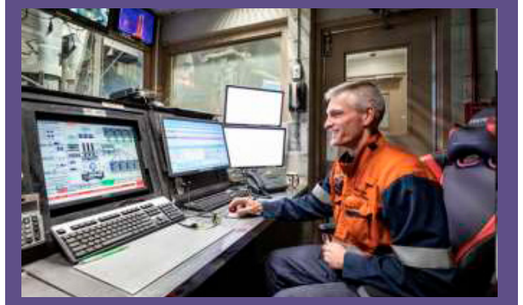
"As Southwire explores the potential of low-carbon wire and cable products, we are pleased to work with key leaders in our supply chain to reduce greenhouse gas emissions across our value chain," says Burt Fealing, Southwire's executive vice president, general counsel and chief sustainability officer. "We look forward to continuing to generate a broader impact on carbon reduction by collaborating with like-minded companies such as BHP."

The pilot aims to leverage BHP's carbon offsetting capabilities to offer Southwire a carbon neutral copper product during the transition period as [we] pursue operational decarbonisation and is achieved by the retirement of high-quality carbon offsets against emissions from the production, transportation and Southwire's processing of the designated copper shipments. The carbon offsets were sourced from a project in Peru that provides additional sustainability co-benefits, such as biodiversity conservation, improved water quality and support for local communities.

'Carbon neutral' is not intended to imply certification under any standard or application of a particular methodology and includes all those greenhouse gas emissions as defined for BHP reporting purposes.

More transparent and sustainable supply chains

Achieving greater sustainability through efficiency gains



In September 2020, Vale carried out a transaction with Nanjing Iron & Steel Group International Trade Co., Ltd. via the Contour[3] blockchain trade finance platform.

The use of blockchain and electronic documents allowed for faster, more transparent and secure international transactions. The high level of security and transparency was made possible by the use of the integrated system, in a single platform. There was real-time visibility of documentation to all stakeholders, improving the level of trust and transparency among all parties involved.

The transaction allowed Vale to achieve better customer centricity, providing a better transaction experience for the customer. In addition to better security and efficiency, the blockchain transaction was also more environmentally efficient than traditional transaction methods. The transaction was carried out online, with minimal paperwork and document transport.

The reduction in carbon emissions generated from the transaction, when replicated in other Vale transactions in the future, will significantly contribute to Vale's goals of becoming a net-zero company by the year 2050 and reducing net emissions from its client and supply chain by 15% by 2035.

Thanks to the success of this transaction, Vale was presented the Best Trade Finance Solution award, under the category of digital solution, at the Triple A Treasury, Trade, Sustainable Supply Chain and Risk Awards 2021 hosted by The Asset, one of Asia's most respected business publications.

Trade digitalization also offers new possibilities to combine increased productivity with stimulating workplaces, helping to boost talent attraction and retention and create more engaging workplaces for a wider demographic.

"People are increasingly looking for meaningful work and to be more participatory in their roles," says Baratgin.

"It isn't just about bringing bright minds together to provide the resources the world needs, but also about bringing diversity to the workforce. From an organisational standpoint, a more digitalized work environment enables different demographics that perhaps couldn't participate in a traditional setting to become a part of the success story."

Laure Baratgin, Rio Tinto

[3] Contour has advised that as at 30 November 2023, they have discontinued operations.

Realising the value of digital transformation in trade

Although good progress is being made towards trade digitalization, numerous obstacles to adoption persist. Some of these are common to all industries, but others are more keenly felt in the metals and mining sector. All of them require urgent solutions if the full value of digital transformation in trade is to be realised.

Case study: the electronic bill of lading

The ideal end state for the eBL would be to move away from the walled gardens of rulebooks to global legal recognition.

The bill of lading (BL) is one of – if not the – most important pieces of paper in metals and mining trade. It provides evidence of the agreement between the shipper and carrier for the movement of cargo, it is a receipt for the goods, and it is a document of title to the goods. If an original bill of lading is lost, delayed, or stolen, the recipient cannot take possession of the goods.

While electronic versions of the BL have been made available for some time by various solution providers such as Bolero, ICE Digital Trade, WaveBL and CargoX, to name a few, only a small number of jurisdictions recognise electronic trade documents as equivalent to their paper counterparts. The current commercial systems rely on contract law, whereby all parties sign up to a rulebook offered by one of these solution providers. However, at present, each rulebook is separate, and there is no interoperability between systems.

"If you start the transaction in one rulebook environment, you have to keep it there all the way to the end," says van Heukelem. "That is quite often challenging, because that means that all the shipowners, all the banks, and all the customers, and so on, all have to be on the same platform."

Case study: the electronic bill of lading

Work is being carried out by industry bodies to standardise eBLs and the underlying data standards, which will mean that the process will be the same no matter what system an exporter, their customers or their financiers are using. The FIATA, DCSA and BIMCO have developed eBL data standards for the container, freight forwarding and bulks sector, all aligned to the same unifying UN/CEFACT standards.

However, without interoperability between the different eBL vendors, the number of different systems available means it is difficult for stakeholders to know where to commit themselves. The change management process involved in moving from one solution to another is dissuading so many from taking up any solution, particularly because it involves investment in a process that is still not widely adopted.

"In the mining sector, this issue is particularly acute. You can have a buyer who is on an eBL platform who then splits and resells a cargo to several smaller companies who are not in the digital ecosystem, and who miss out on the benefits of digitalization. These companies don't have the capacity to sign up to several different platforms, and so that's where the digital process ends."

Michel Alves, Rio Tinto

"In the mining sector, this issue is particularly acute." adds Alves. "You can have a buyer who is on an eBL platform who then splits and resells a cargo to several smaller companies who are not in the digital ecosystem, and who miss out on the benefits of digitalization. These companies don't have the capacity to sign up to several different platforms, and so that's where the digital process ends."

"We need to break down silos," says Naik. "We hear from financiers that a lack of recognition of rights and obligations arising from the use of electronic documents prevent them from being able to rely on such documents in certain jurisdictions."

Activity by the International Group of Protection and Indemnity Clubs (IGP&I), which provides indemnity insurance to around 90% of the world's ocean-going tonnage, has helped reduce uncertainty around the use of eBLs, with the 12 Protection and Indemnity (P&I) clubs within IGP&I agreeing that certain eBL systems are equivalent to a traditional bill of lading for insurance purposes.

However, the ideal end state for the eBL would be to move away from the walled gardens of rulebooks to global legal recognition. Notable progress has been made in English law, and in July 2023, the UK Parliament passed the Electronic Trade Document Act, allowing businesses to use electronic trade documents instead of paper documents. Since English law is the governing law of many of the documents used in international trade, this is particularly noteworthy.

Also, other countries can promote recognition of electronic trade documents in their own jurisdictions by aligning to the United Nations Commission on on International Trade Law's (UNCITRAL) Model Law on Electronic Transferable Records (MLETR).

"In 2023, we have achieved significant progress, with five G7 countries already aligned or considering alignment to the MLETR. This development sends a strong signal given the G7's influence in global trade. However, MLETR should also be seen as accessible to developing economies. Digital trade can be a strong catalyst for growth, and legal recognition of electronic records is a prerequisite for realizing this potential. Although each country's journey will be unique, we urge all trading nations to commence their efforts promptly, and will work to engage industry in this endeavour." stated Pamela Mar, Managing Director of the Digital Standards Initiative of the International Chamber of Commerce.

In July 2022 a transaction involving the sale of nickel matte by BHP to a Chinese resources company was a major milestone. This follows Singapore's 2021 amendment to its Electronic Transactions Act (ETA) – adopting the UNCITRAL Model Law on Electronic Transferable Records (MLETR) which grants eB/Ls the same legal status as paper equivalents – as well as the incorporation of Singapore law recognizing eB/Ls in ICE Digital Trade's eDocs Services & Users Agreement.

The MMDF believes that legal reform should be done from a technology-neutral approach (which both the MLETR and UK Act support) with minimal intervention, with the standards for electronic document platforms and systems being determined by industry.

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MMDF members contributed to the consultation held by the Law Commission of England and Wales, and will continue to advocate for legal recognition of electronic versions of trade documents. However, keeping the topic at the top of government agendas amid so many competing priorities over the coming months is not guaranteed. The importance of legal reform cannot be overstated: without it, it will not be feasible for the metals and mining industry – or indeed any industry – to achieve full trade digitalization.

Tackling legal uncertainty

Resistance to embracing electronic trade documents by multiple parties, such as trade financers, shipping companies, insurers, customs authorities and inspection companies, can be overcome in large part once legal reform to enable their recognition is enacted, however there are other important regulatory barriers to digital trade.

The uptick in data localisation laws is a key concern. There are now restrictive data policies in many jurisdictions around the world. These laws impede the transfer of data, for example by making companies process data locally or requiring individual or government permission before transferring data.

"The readiness of counterparties to adopt trade digitalization varies depending on geographies," says Hall. "There are a lot of pockets where we hear good intentions, but the jurisdiction that they're operating in does not allow them to come onboard."

The ICC's Digital Standards Initiative MLETR Progress Tracker provides a good overview of the progress being made in the various jurisdictions.

Many governments are working to combat the proliferation of digital trade barriers. Recently signed free trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Regional Comprehensive Economic Partnership (RCEP), and the Singapore-UK deal, include explicit chapters on digital trade. However, what is still missing is a multilateral agreement from the World Trade Organization in this regard.

Free trade agreements have delivered meaningful and practical gains to minerals commodity exporters and mining services providers. As new agreements are negotiated, wording must be included to protect the free flow of information across borders while prohibiting data localisation.

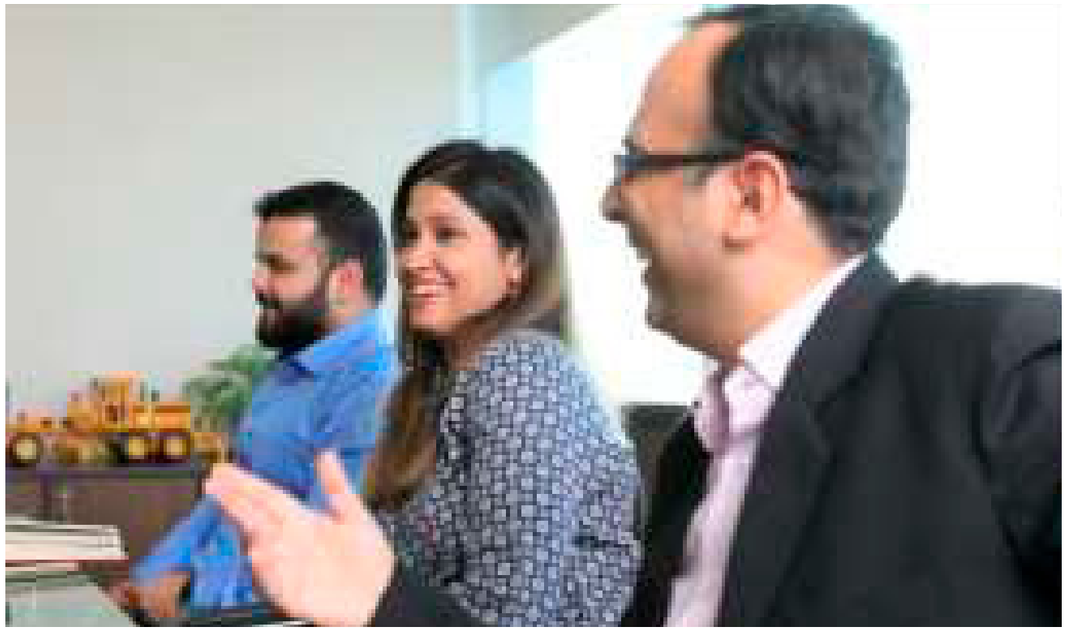
Free trade agreements have delivered meaningful and practical gains to minerals commodity exporters and mining services providers, and it is of paramount importance that, as new agreements are negotiated, wording is included to protect the free flow of information across borders while prohibiting data localisation.

Raising awareness

Beyond the concrete barriers to adoption, there remains a lack of awareness across the ecosystem of the benefits and possibilities of trade digitalization. Trade finance transactions involve multiple parties, such as shipping companies, chambers of commerce, insurers, customs authorities and inspection companies, all of whom must also move to electronic documentation and channels – but advocacy for digital trade has not reached all of these parties.

Even with new legislation and standards, there is still a lot of work that needs to be done. While getting the foundations in place is an important pre-requisite, ensuring adoption at scale will take a collaborative effort.

Raising Awareness



"There is a huge need to increase awareness," says van Heukelem. "We regularly find ourselves spending time in bilateral conversations with customers or vessel owners for example, who have doubts about the electronic processes. We often come across misunderstandings, or a lack of knowledge about what rights and obligations are conferred by, say, an eBL."

"We are in the 21st century, and we cannot afford to not be digital, especially in a multi-billion-dollar business." says Tavares. "The reality is that we may have the bank on board, the charterparty that enables eBLs, and the vessel owner who is comfortable with using an eBL, but then when we approach the customer, they say no. The readiness is different, and people's exposure to trade digitalization is still very uneven across jurisdictions. This is where we believe the MMDF can add value in raising the level of awareness and advocating for change.

With so many parties in a transaction, we need to get buy in from everyone, and that is a problem that we are still coming up against. We believe that once we have the legal background working, onboarding stakeholders to the platforms will be easier and adoption will be improved. That's why we are advocating to create a legal framework for electronic bills of lading including talking to governmental and institutional stakeholders and participating in webinars on the subject."

With intricate workflows spanning multiple parties, bringing all participants in transactions to the same level of digital readiness is an important next step, to deliver benefits to all stakeholders across the supply chain.

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Organisations such as the ICC have been instrumental in producing messaging to the wider business community around the benefits and implications of electronic trade documents, however there is clearly some way to go. We believe that a collaborative effort by industry bodies representing all participants in the ecosystem is required, in order to drive greater adoption of trade digitalization.

Building bridges between digital islands

There is currently no one holistic solution for end-to-end trade digitalization, and given the complexity of global trade, it is unlikely that there ever will be. Nor are we advocating for one platform to win them all. As companies work to enhance their processes and operations, the future state of digital trade will consist of numerous platforms and solutions that connect seamlessly to one another.

Nonetheless, this seamlessness remains a long way off.

"API interoperability is an issue for us and for the industry in general." says Tavares. "We have carried out many trials with various platforms. Despite the many successes we have achieved, there were a few cases that when we tried to execute with the customer, the API didn't work."

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Erick Tavares, Vale

"The problem here is that there are so many solution providers who are trying to solve one particular issue without taking a global view. They have a limited budget, they're trying to build their customer base, and integrating their platforms with others is not necessarily their top priority," says Naik. "They also can't account for every single use case: because they are trying to provide a service to so many people, they can't devote the right amount of time to make sure that everything works smoothly."

The solution lies in standardisation. Developing reference data and messaging standards through API standardisation will be an important enabler for better connectivity between different platforms. Swift, which published an information paper on digitising trade[4], is working with its partners to develop a catalogue of trade based APIs to help alleviate friction in transactions including those arising from different standards and specifications. However, if these standards are to be useful, they must take into account all relevant stakeholders.

"The focus of each of these international organisations may not be aligned," says Naik. "We need standards that work for everyone, because otherwise they won't be adopted."

In early 2023, Contour and TradeGo announced a partnership to accelerate digital trade finance transformation in China and beyond. The Contour-TradeGo collaboration is significant for the ecosystem as it connects the bulk commodities physical supply chain in China to an established global financial supply chain network[5]. No one solution can provide end-to-end digitisation but through partnerships like this, corporates and banks can sync their trade finance requirements with the physical shipment and benefit from an interoperable, end-to-end paperless transaction.

This trend, if it continues, will help to connect the proliferation of digital islands that have sprung up in recent years.

Linking different jurisdictions

To achieve global trade digitalization, it is also critical to be able to access and connect all major jurisdictions. However, with escalating tension in global trade, countries are increasingly sensitive towards its own data privacy, network connections and even server locations. Each is at a different stage, with different policies and incentives towards digitalization. Additionally, with language barriers to contend with as well, we face a greater challenge in accessing and connecting the pertinent data to achieve global trade digitalization. Perhaps one solution is to build a connector ecosystem that enables linkages with platforms existing in different countries. In 2022, for example, trade finance network Contour partnered with software consultancy ThoughtWorks[6] in China to propel its local clients to integrate into its network.

"We need more of this, and not just from the solution provider side" says van Heukelem, BHP. "In standardisation and legislation, too, it is critical that all jurisdictions are engaged."

4 https://www.swift.com/news-events/news/major-trade-banks-and-ecosystem-players-highlight-key-enablers-trade-digitisation
5 https://www.contour.network/press-release/contour-partners-with-tradego-to-accelerate-digital-trade-finance-transformation-in-china-and-beyond/
6 https://www.contour.network/press-release/contour-partners-with-thoughtworks-to-ramp-up-digital-trade-finance-in-china/

Imperatives for industry, regulators, solution providers and policymakers

The positive impacts from digitalizing metals and mining trade are manifold: from efficiency gains to greater inclusion, better visibility of supply chains and more transparency. Trade digitalization can make supply chains resilient and adaptable enough to manage whatever challenges and opportunities arise, both now and in the future.

The benefits are expected to be far-reaching: with productivity growth and efficiency gains, consumers worldwide can potentially gain better access to good quality goods at more competitive prices.

The MMDF members are customer-centric organisations, that seek to understand what is happening with their customers and what is going to be happening in the industry going forward. Digital transformation is an important mega trend that will shape the future of the global economy.

There is no shortage of willingness to digitalize among trade ecosystem participants. There is a very clear business case for digitalization though barriers and challenges exist. The MMDF recognises this and its primary goal is to change the status quo. And recent global events, from the Covid-19 pandemic to the ongoing supply chain disruption, have only served to underscore the urgency of moving away from antiquated paper-based processes.

Trade digitalization won't happen on its own. To accelerate adoption and bring forth the future state of paperless, digitised trade, the MMDF calls for:

- The consideration of industry voices when standards and rules are being designed, to ensure that they do not inadvertently disadvantage certain stakeholders within the ecosystem
- Legal certainty around the use of electronic documents and trade instruments through legal reform, such as the UK's Electronic Trade Documents Act and the adoption of the UNCITRAL Model Law on Electronic Transferable Records
- The inclusion of digital trade facilitation measures in bilateral and multilateral trade agreements
- Unified standards and interoperability measures that are technology agnostic
- A truly global approach to digitalization that includes all jurisdictions
- Better education, advocacy and awareness-raising of the benefits of trade digitalization for all participants

The MMDF commits to working with solutions providers across the industry ecosystem, industry bodies, standards setters and other organisations to test and pilot solutions and provide insights, as well as using its market-making position to advocate for, and educate on, trade digitalization.

In a disjointed, uneven digitalization environment that lacks global solutions, standards and legal certainty, MMDF members have already demonstrated that trade digitalization can be achieved in 15% -30% of iron ore transactions.
To close the gap and reach 100% across the entire industry, it is imperative that the barriers to trade digitalization are overcome as a matter of urgency.

Contributors

This position paper was developed jointly by MMDF members Anglo American, BHP, Rio Tinto and Vale, and co-published with BIMCO.

About Anglo American

Anglo American is a leading global mining company and our products are the essential ingredients in almost every aspect of modern life. Our portfolio of world-class competitive operations, with a broad range of future development options, provides many of the future-enabling metals and minerals for a cleaner, greener, more sustainable world and that meet the fast growing every day demands of billions of consumers. With our people at the heart of our business, we use innovative practices and the latest technologies to discover new resources and to mine, process, move and market our products to our customers – safely and sustainably.

As a responsible producer of copper, nickel, platinum group metals, diamonds (through De Beers), premium quality iron ore and steelmaking coal – with crop nutrients in development – we are committed to being carbon neutral across our operations by 2040. More broadly, our Sustainable Mining Plan commits us to a series of stretching goals to ensure we work towards a healthy environment, creating thriving communities and building trust as a corporate leader. We work together with our business partners and diverse stakeholders to unlock enduring value from precious natural resources for the benefit of the communities and countries in which we operate, for society as a whole, and for our shareholders. Anglo American is re-imagining mining to improve people's lives.

www.angloamerican.com

About BHP

BHP is a leading global resources company with approximately 80,000 employees and contractors, primarily in Australia and the Americas. BHP's products are sold worldwide, and it is among the world's top producers of major commodities, including iron ore, copper, nickel, and metallurgical coal.

Read more about our approach to climate change:

www.bhp.com/climate

About Rio Tinto

Rio Tinto is a leading global mining and materials company. We operate in 35 countries where we produce iron ore, copper, aluminium, critical minerals and other materials needed for the global energy transition and for people, communities, and nations to thrive. We have been mining for almost 150 years and operate with knowledge built up across generations and continents. Our purpose is finding better ways to provide the materials the world needs – striving for innovation and continuous improvement to produce materials with low emissions and to the right environmental, social and governance standards.

www.riotinto.com

About Vale

Vale is a global mining company that exists to improve life and transform the future together. One of the world's largest producers of iron ore and nickel and a major copper producer, Vale is headquartered in Brazil and operates around the world. Its operations comprise integrated logistics systems, including approximately 2,000 kilometres of railways, marine terminals and 10 ports distributed around the globe. Vale has the ambition to be recognized by society as a benchmark in safety, the best-in-class reliable operator, a talent-driven organization, a leader in sustainable mining, and a reference in creating and sharing value.

www.vale.com

About BIMCO

BIMCO members own or operate 62% of the global fleet and consist of local, global, small, and large companies. We are an organisation and global shipping community of over 2,000 members in around 130 countries.

From our offices in Houston, London, Copenhagen, Athens, Brussels, Singapore and Shanghai we aim to help build a resilient industry in a sustainable future whilst protecting world trade. We do this
by finding practical solutions for our members to help them manage risk in a changing world.

To help increase adoption of digital trade documents in shipping, BIMCO has published an electronic bill of lading standard which is a structured dataset consisting of 20 predefined data fields that are common to bulk shipping bills of lading.

BIMCO is a founding member of the FIT (Future International Trade) Alliance, a cross-industry coalition of organisations working together to produce open standards for electronic trade documents. BIMCO's eBL Standard is aligned with the UN/CEFACT Multimodal Transport Reference Data Model as well as the standards produced by FIT Alliance members.

In March 2023 BIMCO launched a campaign to help accelerate the adoption of electronic bills of lading in the bulk shipping sector.

The 25 by 25 Campaign is a pledge by the world's largest bulk shippers to commit to carrying on eBLs 25% of their annual trade volume for at least one commodity by 2025. Support for the initiative comes from carriers, the banking and finance community and other stakeholders.

www.bimco.org/ebl

Appendix

Three big questions blockchain is helping us answer (bhp.com)

BHP and top steelmaker Baowu Group complete iron ore blockchain trade | Reuters

BHP and Southwire collaborate for first carbon neutral copper cathode delivery

BHP enters into nickel supply agreement with Tesla Inc

CargoDocs Metals & Minerals Paperless Trade Newsletter (1H 2022) | ICE Digital Trade

MineHub | Transformative Efficiency

Circulor | Home | Better business through traceability

Contour partners with essDOCS following successful Rio Tinto & Baosteel transaction | ICE Digital Trade

Contour partners with Chinsay following a successful transaction with Cargill and Rio Tinto - Contour

Rio Tinto and Guangxi Shenglong Metallurgical complete transaction on Contour - Contour

Contour supports LC transaction between Nanjing Iron & Steel and Rio Tinto - Contour

Baosteel and Rio Tinto complete first deal on Contour platform - Contour

Baosteel and Rio Tinto complete first deal on Contour platform (dbs.com)

Rio Tinto and Cargill pioneer industry's first fully integrated paperless trade (theglobaltreasurer.com)

BNP, HSBC, Cargill and Rio Tinto complete iron ore blockchain transaction - International Mining (im-mining.com)

Rio Tinto, Baosteel carry out Rmb deal on Contour as new banks join network | Global Trade Review (GTR) (gtreview.com)

2021-08-18-Media-Release.pdf (customs.gov.sg)

Vale completes its first sale of iron ore using blockchain technology with Nanjing Iron & Steel