



# RIBBON COMMUNICATIONS SUSTAINABILITY REPORT 2020-2021



# CONTENTS

## 3 Message from our CEO

## 4 About Ribbon

- Ribbon by the Numbers .....4
- Our Business.....5
- Our Values.....5
- Our Products.....5
- Our Customers.....6

## 7 Sustainability at Ribbon

- Stakeholder Engagement .....8
- Materiality Assessment .....10
- Sustainability Strategy and Targets .....11

## 12 Customers

- Ribbon as the Supplier of Choice .....13
- Innovation .....19
- Service and Product Quality.....22

## 23 Environment

- Climate Resilience .....24
- Driving Energy Efficiency at our Global Sites .....26
- Resource Efficiency in our Supply Chain .....27

## 28 Social

- Team Ribbon.....29
- Community Investment.....35

## 36 Governance

- Corporate Governance .....37
- Ethical Conduct .....38
- Risk Management.....39
- Business Continuity.....40
- Information Security and Data Privacy .....40

## 41 Appendix



# MESSAGE FROM OUR CEO



**As Ribbon has evolved and matured through both organic growth and acquisitions, the company has adopted a more strategic approach to Environmental, Social and Governance (ESG) practices.**



**Bruce McClelland**  
President and Chief Executive Officer

**-30%**

**An initial target to reduce our greenhouse gas emissions by 30% by 2030**



If there was ever a year when adaptability, resilience and trust were critical to our success, 2020 was that year. The speed and scale of change caused by the COVID-19 pandemic meant that we all had to adapt to new ways of interacting, working, and conducting our daily lives. At the core of society's ability to continue to function under restrictions related to health considerations, social distancing, travel bans, office and factory closures and more, was the ability to stay connected. The Internet – enabling virtual meetings, remote learning, social media, VoIP collaboration, e-commerce – was an anchor for society that enabled us to continue to function and live our lives under the most difficult of circumstances.

In 2020, we completed our acquisition of ECI Telecom Group Ltd. and continued to merge our businesses into a unified global Ribbon organization. The products and technologies that we now provide are enabling the delivery of fixed and mobile broadband data to meet demand across many industries and geographies, and also support the incredible advancement of online

collaboration platforms such as Zoom and Microsoft Teams. With the continued exponential growth in data consumption, the ever-increasing importance of always-on connectivity, and the endless need for newer technologies like 5G, we will continue to help drive digital transformation through our solutions and services. At the same time, our technology supports pressing global environmental priorities as well. Communications technology is a catalyst and an enabler for sustainable development; it enables us all to do much more with fewer energy resources, helping mitigate global climate change. All in all, we move into 2021 a stronger, more resilient company, positioned at the heart of environmental and social transformation.

As Ribbon has evolved and matured through both organic growth and acquisitions, the company has adopted a more strategic approach to Environmental, Social and Governance (ESG) practices. This year, we undertook a comprehensive process to analyze the needs and expectations of our key stakeholders, and to

identify the areas that contribute the most to our sustainability footprint. This led us to develop a sustainability strategy supported by three initial targets:

1. We are focused on our carbon emissions, with a target to reduce our greenhouse gas emissions by 30% by 2030.
2. We are targeting to improve our workforce diversity with a specific goal to achieve at least 30% of women in management, an area which tends to be overshadowed by male counterparts in many technology companies. We plan to redress this imbalance through a range of actions that will see Ribbon being led by more women to an even stronger future in which we provide more best-in-class solutions and outstanding service to our growing global customer base.
3. We target to improve controls in our supply chain to improve ethical and sustainable conduct.

I hope this report demonstrates not only our commitment but also our confidence in delivering on our targets and supporting the UN Sustainable Development Goals.

Thank you for your interest.

**Bruce McClelland**  
President and Chief Executive Officer

# ABOUT RIBBON

## Ribbon by the Numbers:

**\$843.8 million**

Total revenue (2020)

**1,000+**

Customers

**1,000+**

Patents

**\$194 million**

R&D spend (23% of total revenue)

**140**

Countries

**3,700+**

Employees

## Our Business

Ribbon Communications (Nasdaq: RBBN) is a global provider of trusted network and communications technology that benefits people and the planet. Our converged communications software and network solutions help power communications service providers, enterprises, governments, and critical infrastructure providers' networks and connect their customers through Internet and cloud-based technology. Using our trusted solutions, our customers can offer services that improve the quality of life for billions of people around the world, support digital inclusion across markets and lower global greenhouse emissions through efficient bandwidth utilization and cloud-based applications. We have a global presence with research and development, sales and support locations in over 35 countries.

## Our Values

- **Team:** We work as One Team, advancing together towards common and clear goals.
- **Passion:** We take pride in and celebrate our achievements.
- **Customer:** We strive to be a trusted advisor to our customers. We do this by listening to them, anticipating their needs and offering best in class solutions.
- **Innovation (Creativity):** Ribbon's competitive advantage relies on our ability to offer innovative, creative and state-of-the-art technology.

## Our Products

Ribbon's industry-leading portfolio of technology products are designed to ensure that calls and data are efficiently routed and securely transmitted over many of the world's largest communications networks today and prepare for the networks of tomorrow. Our offerings fall into two broad categories:



### Cloud and Edge

**Secure, anywhere access to real-time communications**

A range of cloud-based solutions that include VoIP (Voice over Internet Protocol) applications and voice calling for collaborating apps, as well as security applications and fraud mitigation through identity assurance for robocalling.

### IP Optical Networks

**Flexible, secure, efficient and expandable data transport**

A solution portfolio providing cyber-secure multilayer optimized IP and optical transport including carrier ethernet for businesses and networks, enabling efficient and flexible expansion of capabilities, including 5G, for service providers, utilities and critical infrastructure users.

Underpinning everything we value, is the Ribbon concept of TRUE:



**T**ransparency   **R**espect   **U**npretentious   **E**mpowerment

We are open and transparent in everything we do, creating trust among employees, customers, partners, and vendors.



## Our Customers

Our global telecommunications customers include fixed-line, wireless, cable, internet and service providers. Our enterprise customers include businesses of any size and large and distributed enterprises across various sectors with a concentration in government, healthcare and education sectors. We sell to customers via our direct sales team as well as through indirect channels that include resellers, system integrators and service providers. Independent software vendors also partner with Ribbon to source our software solutions and market them through their sales channels. Many of Ribbon's solutions have been certified and deployed by governmental agencies around the world including the U.S. Department of Defense.



**Ribbon has participated in EcoVadis global supply chain sustainability ratings since 2011, achieving a Silver Medal in 2015 and annually thereafter, including in 2020, placing Ribbon in the top 25% of our peer companies in the Information and Communications Technology sector. Several Ribbon customers require our disclosure to EcoVadis as reassurance that Ribbon is operating ethically and sustainably.**

Ribbon was a 2020 winner of the Global Sustainability Award for Excellence in Software QuEST 2020 Telecom Industry Association (TIA) Sustainability Awards. TIA's Global Sustainability Awards recognize organizations achieving excellence and showcasing energy, passion, and innovation in corporate sustainability, based on performance as recorded through assessments from the [TIA Sustainability Assessor](#). The Sustainability Assessor is designed to enable companies to rapidly self-assess and benchmark

their sustainability and corporate social responsibility programs against industry best practices and benchmarks.



# SUSTAINABILITY AT RIBBON



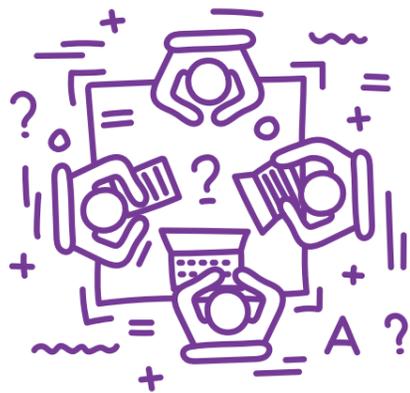
“ Business integrity through our entire value chain, responsiveness to customer needs in an ever-changing world, respecting planetary boundaries and inspiring and empowering people are important components of what we consider as part of our approach to sustainability. We are taking deliberate action to further incorporate these elements in our company strategy and enhancing our transparency so that all stakeholders can make informed decisions. ”

**Patrick Macken**  
Executive Vice President and Chief Legal Officer

# STAKEHOLDER ENGAGEMENT

At Ribbon, we welcome engagement at all levels of the organization to help us understand the needs of stakeholders and position ourselves to respond effectively. In the past year, we undertook a process of stakeholder mapping to identify Ribbon’s key stakeholder groups and formulate a strategic approach to ongoing engagement.

A summary of our stakeholder groups and engagement approach is shown below:



## COLLABORATE

Engage meaningfully, collaborating closely on a variety of topics

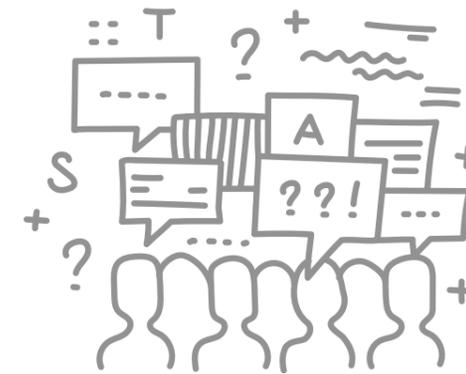
- Customers
- Employees
- Suppliers
- Society and Planet



## CONSULT

Listen closely to stakeholder needs and expectations before making important decisions in our business and proactively consult on key issues

- Capital Markets
- Regulators
- Industry



## COMMUNICATE

Inform transparently of our progress and performance and engage more deeply on an as needed basis

- Financers
- Communities
- Influencers

For more details of our stakeholder group definitions and engagement framework, see [Our Approach to Stakeholder Engagement](#).

## Supporting our stakeholders during COVID-19

Through the COVID-19 pandemic, which continues to impact our lives and business in 2021, we aimed to maintain close contact with key stakeholders and offer support where needed. Specifically, we supported our employees in different ways (see Section: [Team Ribbon](#)) and provided additional resources and services for our customers (see Section: [Supporting Customers through the Pandemic](#)).

We continue to monitor the developments regarding COVID-19 closely and plan dynamically as the global economy continues to recover. We observe all regulatory requirements relating to safety protocols in the workplace and provide support and resources to our employees as required.

## Stakeholder interest in sustainability

Feedback from our stakeholders, in particular, customer and investor groups, indicates a growing interest in sustainable business practice and a demand for greater transparency on different aspects of our business. Many of our major customers are now incorporating sustainability requirements as a condition of participation in business tenders or requiring qualification as a customer vendor, or benchmarking sustainability performance as a factor in procurement decisions.

We regularly receive enquiries about our sustainability performance, targets and progress. Key areas in which customers and investors have shown interest in the past year have included:

### Environment

- The ways in which Ribbon is improving its environmental impacts and measures taken to minimize impact on climate change from Ribbon's activities and those of its supply chain
- Adherence to regulations for storage and transportation of hazardous products or waste
- End of life arrangements for our products
- Details of our Environmental Management System and ISO certifications

### Social

- Compliance with health and safety regulations and conducting risk assessments
- Details of protection for employee safety working at height, on live electrical equipment, work related driving and general construction activities
- Labor and human rights policies and practices specifically with regard to child labor in our supply chain
- Workplace diversity policies and processes to ensure absence of discrimination
- Supplier/vendor diversity and processes to support inclusive procurement
- Responsible sourcing, traceability, and compliance with labor and human rights laws, including with regard to conflict minerals

### Governance

- Transparency on ethical business practices and avoidance of conflicts of interest
- Mechanisms for reporting of suspected legal or ethical violations by employees, customers or vendors to report without threat of reprisal.
- Information security and processes in place to ensure protection of customer information

The topics above were included as critical stakeholder input in our materiality assessment conducted in 2021 and informed the overall ranking of material topics.

# 65%

**We estimate that more than 65% of our annual global revenue is influenced by sustainability considerations and requirements from our customers.**



# MATERIALITY ASSESSMENT

In early 2021, we performed a materiality assessment covering our global operations. The results of the materiality assessment were approved by our Executive Team and supported by our Board of Directors. To deliver a robust assessment, we followed a structured process, informed by our stakeholder mapping process that preceded this work. See [Our Approach to Stakeholder Engagement](#).

## Gathering inputs

- Review of the expectations of stakeholders based on key sustainability reporting standards and globally relevant frameworks from several sources including:
  - The UN Sustainable Development Goals
  - The Global Reporting Initiative (GRI) Sustainability Reporting Standards
  - The Sustainability Accounting Standards Board (SASB) Technology Hardware and Software Standards
  - Standards for the Technology Industry
  - NASDAQ ESG Reporting Guide
  - World Economic Forum ESG Metrics
  - EcoVadis Sustainability Assessment Tool
- Analysis of the expectations of customers, peers and suppliers based on our regular interactions with them throughout the year and specific queries or requests received. We also analyzed the public disclosures of 8 global customers, 6 peer companies and 2 global suppliers.
- Research on key industry trends and emerging sustainability topics that are connected to our current and future business.
- Interviews with more than 20 senior leaders at Ribbon, on topics they, their teams and their customers value.

## Evaluating and prioritizing topics

- Aggregation of all inputs leading to the creation of a list of 127 individual sustainability topics with the potential to be highly material from an impact or stakeholder influence standpoint. These were grouped into 17 clusters and scored on a weighted scale, reflecting the degree of stakeholder influence, as prioritized by our stakeholder mapping.
- Ranking of topics for the degree of impact based upon a consensus of management evaluation and judgement. The criteria for this assessment included the size of Ribbon’s organization and overall ability to lead or influence market change and transformation, as well as management priorities resulting from market and stakeholder demands, as perceived by Ribbon managers. Of the full list, 19 topics received a high score while 26 topics were scored zero.

## Establishing the most material topics

- Calculation of an overall rating for each topic using the weighted stakeholder assessments and the management-led degree of impact assessment. We set a threshold for high materiality at 15 topics, believing that this represents strong overall coverage of important issues reflecting different aspects of our business and meeting a range of stakeholder needs.

The resulting list of Ribbon’s Top 15 Material Sustainability Topics for 2021 is:

<b>Business Integrity</b>	<b>Secure and Inclusive Technology</b>
Business ethics	Data privacy management
Responsible supply chain management	Cybersecurity & information security
Business continuity & recovery	Access to connectivity
	Digital inclusion
<b>Low Carbon Economy</b>	<b>Future-Fit Workforce</b>
GHG emissions & reductions	Diversity, equity and inclusion
Sustainable products	Employee engagement
Advanced technologies & innovations	Occupational health & safety
Digital transformation	Employee training and development

See [Material Topic Definitions](#) in the Appendix of this Report for our definitions of these topics. See also [Our Approach to Materiality](#).

# SUSTAINABILITY STRATEGY AND TARGETS

We aspire to be proactive about driving sustainability and further embedding sustainable practices throughout our business, in line with the expectations of stakeholders. Using our materiality assessment, we established the following four-pillar strategy and long-term goals. Further we aligned our sustainability strategy to critical global issues addressed by the UN Sustainable Development Goals, which we also included as input to our materiality assessment.

Strategy	Trusted Technology for People and Planet			
<b>Pillars</b>	<b>Business Integrity</b>	<b>Secure and Inclusive Technology</b>	<b>Low Carbon Economy</b>	<b>Future-Fit Workforce</b>
<b>Long-term Goal</b>	Be a positive and trusted force in business through ethical conduct in all that we do	Be the provider of choice for safe and secure network and communications technology	Contribute to decarbonizing the global economy through innovative technologies and resource efficiency	Empower and engage a diverse workforce to deliver trusted technology for a low carbon economy
<b>Alignment with the UN Sustainable Development Goals</b>	<b>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b> 	<b>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</b> 	<b>13 CLIMATE ACTION</b> 	<b>8 DECENT WORK AND ECONOMIC GROWTH</b> 

In 2021, we will be establishing workstreams to progress each of these strategic pillars and defining multi-year targets in relevant areas. In the meantime, our Management Team has adopted three targets in areas we believe are the most critical for our future success and for the success of people and the planet.

## Our Three by Thirty Sustainability Targets

### Climate Change

Reduce direct carbon emissions by 30% by 2030 (Scope 1 and 2 CO<sub>2</sub>e, from a base year of 2018)

### Diversity & Inclusion

Increase women in management to 30% of all management roles by 2025

### Supply Chain

Audit more than 30% of our Tier 1 suppliers with zero major non-conformances against Ribbon's Supplier Audit Protocol

## Longer Term Sustainability Aspirations

### Climate Change

Net zero carbon emissions

### Diversity & Inclusion

40% women in management

### Supply Chain

100% Tier 1 suppliers compliant with Ribbon's Supplier Audit Protocol and improving sustainability performance

Both our near term targets and longer term (2030-2050) aspirations will require significant focus, investment and change in the way we work and engage through our value chain. We are formulating detailed plans and will report on progress in our annual Sustainability Reports.

See Sections [Climate Resilience](#), [Diversity, Equality and Inclusion](#) and [Ethical Supply Chain](#) for more details about how we plan to achieve our targets.

# CUSTOMERS

“ With a goal of living up to our legacy as the provider of choice for safe and secure network and communications technology, we must stay ahead of the game. We anticipate the challenges our customers face, not only in today’s dynamic environment, but also with the future in mind. Communications technology is one of the great enablers of our time; Ribbon helps make it accessible, safe and secure for billions of people around the world. ”

**Sean Matthews**  
Executive Vice President, Corporate Development and Strategy



# RIBBON AS THE SUPPLIER OF CHOICE

When they need us, our customers can count on Ribbon. Customers trust us to solve their most challenging communications requirements, enabling people and devices to connect anytime, anywhere. We deploy the most advanced technology available to help customers push the boundaries of what's possible today to deliver a better tomorrow for people, business, communities, cities and countries.

## Supporting Customers through the Pandemic

Through 2020 and into 2021, we assured customers of our commitment to supporting their business continuity through the COVID-19 pandemic. The constraints on mobility and in-person meetings through the pandemic accelerated the need for solutions to remote working and commerce for many businesses and industries. As a result, businesses and consumers rapidly shifted from brick-and-mortar facilities and travel, to work-from-home and connect-from-home using cloud communications and collaboration platforms such as Microsoft Teams, Zoom Phone and meetings, online conferencing and webinars and other tools. All these platforms needed to be highly secure and scalable.

During 2020, we implemented programs to help customers address temporary surges in network traffic. These programs include

expanding customer capacity of our Session Border Controllers via temporary licenses, and rapidly deploying work-at-home offerings via our cloud to enable remote workers and remote call center agents to effectively communicate and collaborate. In April, for example, Ribbon offered free delivery of cloud-based communications and collaboration technology on the IBM public cloud to support IBM enterprise clients' remote staff who transitioned to working from home during the COVID-19 pandemic. In certain markets, we accelerated the licensing process using electronic signatures, instead of hard copy contracts, signed and delivered by courier. Using electronic signatures, we were able to onboard customers almost instantly to the required services, supporting them through the pandemic (while also saving paper for additional environmental benefit).



### Supporting our customer in a crisis

In 2020, on Christmas Day, our valued customer, AT&T suffered a major disruption when its Nashville office fell victim to a suicide bombing, destroying much AT&T's hardware infrastructure that supported the supply of regional internet services as well as local wireless, internet and video. The explosion, together with water and fire damage also disabled back up power generators, leading to service disruptions across parts of Tennessee, Kentucky and Alabama. Despite the scale of the devastation, within 48 hours, AT&T was able to restore 96% of its wireless network, 60% of business services were restored, and 86% of AT&T's consumer broadband and entertainment services<sup>1</sup>.

Ribbon was made for these types of situations. The very second we became aware of AT&T's disaster, our teams quickly mobilized, and moved in to rebuild AT&T's network at lightning speed, amid the complications of accommodating the important work of first responders, law enforcement and damage assessors.

“ There was nothing more important to Ribbon than to help AT&T restore communications to Nashville residents and the region. Without hesitation, we brought in our best experts and operators to reconstruct network installations to that the people of Nashville and the surrounding areas could continue to enjoy a happy Christmas with their families. ”

**Steven Bruny**

Executive Vice President, Americas Region

<sup>1</sup> [https://about.att.com/pages/disaster\\_relief/nashville.html](https://about.att.com/pages/disaster_relief/nashville.html)

## Supporting critical network expansion at TELUS during COVID-19

TELUS is Canada's second largest communications provider with 16 million customer connections spanning wireless, data, IP, voice, television, entertainment, video and security, with a strong presence in the healthcare and public sectors. Nothing was more important to TELUS during the pandemic than to grow and maintain critical services for health providers, pandemic responders, government help lines, and Canadian's needing to quickly adapt to working remotely.

“ Working together with Ribbon, a trusted partner for many years, TELUS rapidly augmented its digital platform and voice backbone capacity to support significant increases of voice traffic to ensure its network capacity and robustness provided uninterrupted support for healthcare services, public sector hotlines, and Canadian calling volumes as demand skyrocketed. ”

**Jérôme Birot**

Vice President, Voice Services & Wireless Core DevOps, TELUS Corporation

## Expanding voice calling in Australia and New Zealand

Recognizing the ongoing need in Australia and New Zealand to continue to expand cloud-based voice communications, given ongoing COVID-19 related constraints and new ways of working and trading, in 2021, we expanded Ribbon Connect for Microsoft Teams to service providers and other customers in these countries. Ribbon Connect for Microsoft Teams is a cloud-based service that securely connects new or existing phone lines to Microsoft Teams, one of the fastest-growing unified communications platforms in the world, with more than 250 million users.

## Playing a critical role in remote working and connecting

If there was a single aspect of the pandemic that changed the way we live and work forever,



it was the move to virtual platforms to work, study, connect, buy and sell goods and many other activities. While we all had some exposure to and experience with digital connectivity prior to COVID-19, the sheer scale and speed of the transition to online tools such as Microsoft Teams and Zoom for entire workforces was unprecedented. Many of these online communication and collaboration habits will remain into the future. A recent report estimates that about “20 to 25 percent of the workforces in advanced economies could

work from home between three and five days a week. This represents four to five times more remote work than before the pandemic”.<sup>2</sup> At Ribbon, our role in supporting the rapid exponential growth of these platforms was critical. Our SBCs and other network technology enable secure, reliable voice and video use of these platforms and the confidence of millions of users around the world. In 2020, we saw demand for SBCs for customers such as Microsoft, Zoom and other cloud-based communications and collaboration services increase significantly as schools and universities, medical facilities and individuals needed fast and trusted technology solutions.

<sup>2</sup>The future of work after COVID-19, McKinsey Global Institute, 2021: <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>

# GROWTH IN IP OPTICAL NETWORKS

The global information society is generating a very high volume of telecommunications traffic, for business, entertainment, education, surveillance, industrial control, and other applications. Technologies like 5G, distributed cloud computing and corresponding applications are predicted to continue this exponential traffic growth. IP Optical Networks are at the foundation of this information economy, delivering ultra-low cost-per-bit transport and multi-service flexibility.

Ribbon's IP Optical Network technology provides high-performance, secure, and reliable hardware and software products and solutions for IP networking, switching, and routing, and optical transport for service provider, enterprise and industry verticals with critical transport network infrastructures including utilities, government, defense, transportation and education and research.

“ Our IP Optical network solutions are designed to cost-effectively help communications service providers and enterprises of all sizes modernize their communications networks. ”

**Steven Bruny**  
Executive Vice President, Sales, Americas Region

In 2020, several new customers in 15 countries selected our IP Optical Networks as critical elements in their network expansion and transformation. An essential part of the customer selection process is the Proof-of-Concept Phase, in which customers can gain first-hand experience of our products in action. During 2020, COVID-19 restrictions means that our technical teams could not visit customers to conduct Proof-of-Concept trials. We therefore quickly switched to a remote system, using real-time videos and communication tools to enable customers to experience our products in a realistic way. This enabled Proof-of-Concept trials to be conducted without delay in this challenging period and enable customers to make informed decisions.

We conducted our first remote Proof-of-Concept trial in 2020 during the pandemic for a major telco customer in Taiwan. We connected the customer team members to our laboratory from their homes in Taiwan and produced video clips at each step of the way, showing each of the testing phases and all equipment in great detail. Following dozens of video clips and a successful Proof-of-Concept, the customer confirmed their intent to implement our IP Optical (Apollo) platform.

“ We have continued to see strong growth in our IP Optical offerings from diverse customers around the world. We have become efficient at delivering Proof of Concept remotely, enabling customers to get a very realistic view of our products. Our IP Optical technology plays a major role in helping companies manage their network expansions and upgrades. ”

**Meny Einy**  
Vice President, R&D Operations, IP Optical

## Expanding network capacity in the U.S.

An established provider of telecommunications services to residential and business customers in South Georgia, U.S., Pineland Telephone Cooperative was looking to dramatically increase network capacity and improve communications offerings, in part as a response to increased demand in the wake of the COVID-19 pandemic. Pineland selected Ribbon's IP Optical Network solutions to provide a capacity overlay to Pineland's existing network, which already incorporated our Cloud and Edge products, to modernize and future-proof its communications infrastructure.

“ Ribbon is a trusted partner with whom we have a very long history. Their expanded portfolio of IP Optical and transport solutions are a great technology fit for our rapidly growing network. ”

**Dustin Durden**  
General Manager, Pineland Telephone Cooperative

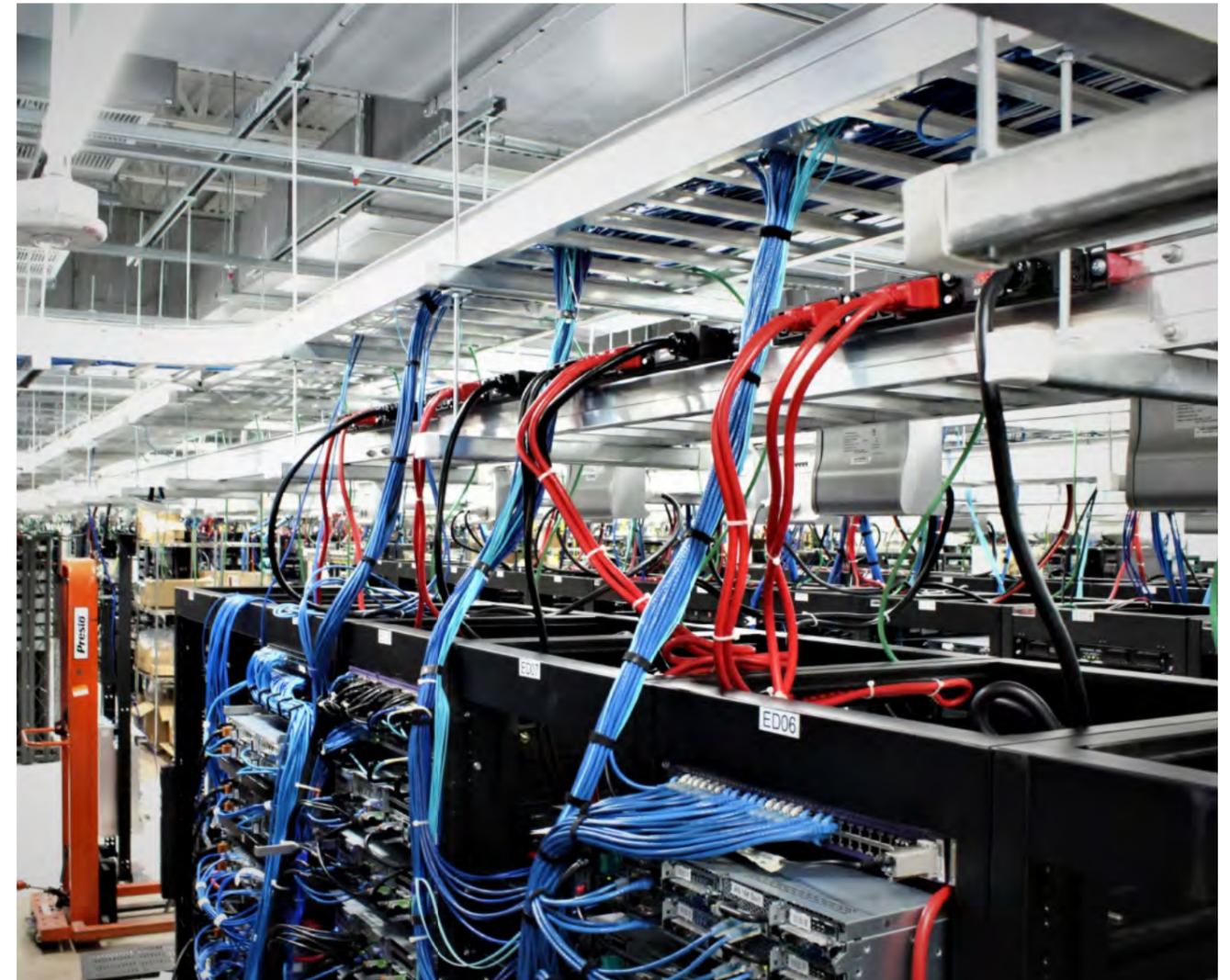
## Bridging the digital divide: connecting rural America

Bridging the digital divide is critical for economic development around the world. The scale of the challenge remains significant. In the U.S. alone, 42 million residents lack access to broadband Internet.<sup>3</sup> In 2021, Tombigbee Electric Cooperative, a provider of internet and phone services across Northwest Alabama, selected Ribbon's Apollo IP Optical Network solution as the basis for delivering broadband access to member customers in its most rural service areas. Ribbon partnered with KGPCo, who provided fiber, routing and access capabilities to deliver a comprehensive solution for Tombigbee to provide 1 Gigabit home Internet speeds to residents, supporting an improved quality of life and economic development in the region.

“ Many of our members live in previously underserved areas and don't have access to high-speed Internet, so our goal is to make Northwest Alabama a Gigabit Ethernet Zone. Leveraging Ribbon's advanced IP Optical platform and KGPCo's industry-leading fiber, routing and access capabilities we are able to deliver ultra-high speed Internet access and broadband to all of our customers, regardless of where they live. ”

**Steve Foshee**

CEO, Tombigbee Electric Cooperative



The new R&D lab hosting Cloud & Edge and IP Optical equipment at Ribbon's HQ in Plano, Texas.

<sup>3</sup> Quoted in StateTech Magazine, "Closing the Digital Divide in Rural America", April 2021, <https://statetechmagazine.com/article/2021/04/closing-digital-divide-rural-america-perfcon>

# HELPING CUSTOMERS STAY COMPLIANT

Regulation in the area of communications technology is almost as dynamic as the technology itself and differs by jurisdiction. We work with our customers to help them meet their legal and regulatory requirements.

## Green buildings in NYC

In 2019, the City of New York enacted Local Law 97 (LL97) as a part of the Climate Mobilization Act, capping carbon emissions from the city's large buildings, approximately 50,000 residential and commercial properties in the city. The aim was to reduce carbon emissions by up to 80% by 2050<sup>4</sup>. Ribbon, a critical supplier to communications technology and internet providers in the city, engaged collaboratively with each customer to apply all the necessary changes to enable them to become compliant with LL97 ahead of the city deadline in 2024. To date, we have modernized networks, replaced network switches and worked with customers to calculate the carbon savings of the new installations. This was not a new activity for Ribbon: our customers around the world have been continuously upgrading their networks and enhancing efficiencies for several years. In New York City, however, this quickly became a more urgent priority. At present, all the products we provide for customers in NYC are compliant with LL97.

## Stirring and Shaking for Compliance

STIR/SHAKEN is a framework of interconnected standards that provides for strong phone call security by authenticating caller IDs as calls pass through a complex web of networks from originator to receiver. At each of these network relay points, STIR/SHAKEN technology digitally validates the handoff of each phone call, enabling a high level of user confidence in the prevention of calls that may be fraudulent, spoofed or sourced from robocallers. In the U.S., the Federal Communications Commission (FCC) required voice communications providers to implement STIR/SHAKEN in the Internet Protocol (IP) portions of their networks by June 30, 2021. The FCC also required all voice communications providers to register with the FCC and assist in inquiries regarding illegal robocalls to ensure that providers are not compliant in enabling robocalling, knowingly or otherwise.

In response to this welcome tightening up of communications security, we introduced our Ribbon Call Trust™ portfolio to deliver advanced identity assurance, validate phone calls and combat robocalls. Call Trust integrates Ribbon's market-leading security, call control, routing and analytics solutions with machine learning modeling to deliver advanced protection against

robocalls and fraud attacks, while ensuring calls are from legitimate sources. It includes Ribbon technology such as Session Border Controllers (SBC), Media Gateway (GSX), Policy and Routing (PSX), Call Controllers, Ribbon Secure Telephony Identity (STI), Ribbon Analytics and Ribbon Identity Hub. The Ribbon Identity Hub is a new solution that serves as the central processing point for identity data and machine learning reputation assessment. The solution is cloud-ready and optimized for both private and public cloud environments.

## STIR/SHAKEN compliance at Intrado

Intrado, a global leader in technology-enabled services, selected Ribbon Call Trust™ to improve the security of its voice network for the benefit of Intrado's customers and end-users. Ribbon Call Trust™ enables Intrado to comply with the FCC's STIR/SHAKEN standards implementation requirements that took effect at the end of June, 2021.



**One of the biggest issues facing our industry today is that consumers have little to no confidence in knowing whether the unrecognized calls they receive are from legitimate sources. Call Trust is designed to restore confidence by knowing that calls sent to a consumer are verified and authenticated.**

**Justin Hart,**  
Chief Technology Officer, Cloud & Edge

<sup>4</sup> <https://www.urbangreencouncil.org/content/projects/all-about-local-law-97>



## Supporting the Healthcare Sector

Ribbon is one of the leading communications infrastructure providers in the healthcare sector in many countries around the world. We work with a variety of systems integrators, service providers and managed services companies to create needed healthcare architecture for critical daily interactions between patients and healthcare workers, administrators and researchers. Our technology – whether hardware or cloud-based – enables the healthcare community to efficiently maintain and expand essential and often life-saving services in a secure environment with robust data-privacy controls.

Novant Health is an integrated network of physician clinics, outpatient centers and hospitals with more than 2,300 physicians and 35,000 employees at more than 800 locations, including 15 medical centers and hundreds of outpatient facilities and clinics. With such a large network, communications technology is the single most significant enabler of Novant Health's ability to operate efficiently and effectively. A long-time, valued customer of Ribbon, Novant Health turned to Ribbon to boost capacity to meet challenging and urgent new demands brought on by the COVID-19 pandemic.



Fraudsters and bad actors are becoming increasingly adept at conducting sophisticated, wide-scale attacks on enterprise communications systems – so we needed a solution that would provide our customers advanced security and protection against various IP-based telephony attacks and annoying nuisance and robocalls. Ribbon's Call Trust solution delivers carrier-grade technology that enables us to have our calls signed and verified to ensure they are from legitimate sources. In addition to protecting our customers, we are also complying with the FCC's mandate to implement the STIR/SHAKEN standard. ”

**Juan Rosero,**  
Vice President of Technology, Intrado



With a spike in the need for real-time remote connectivity during the COVID-19 pandemic, we expanded our support for a variety of healthcare providers including hospitals, clinics, home healthcare companies, dialysis companies and pharmaceutical businesses. In many cases, immediate additional software licensing allowed our customers and their remote workforces to amplify telehealth services, video conferencing and remote access to vital health statistics. ”

**David Hogan**  
Vice President Growth Segments at Ribbon Communications



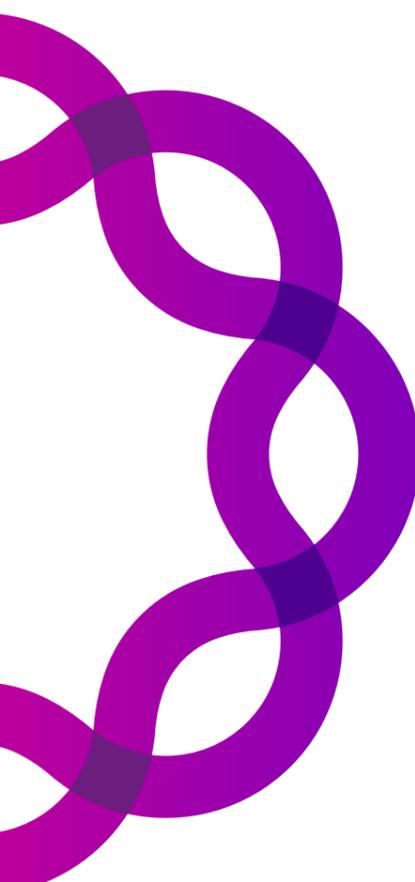
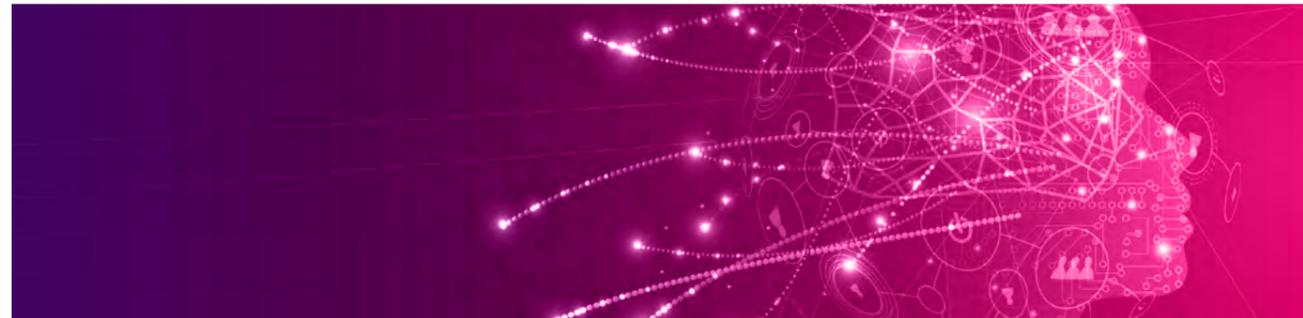
One of the significant improvements we have achieved over the years is reduced systems downtime across our expanding communications network. With the help of Ribbon, our network availability and reliability are second to none. During the COVID-19 pandemic however, we were stretched to our limits, as was every healthcare company everywhere. Fortunately, working with Ribbon, we were able to flexibly adapt to new levels of traffic on our networks and continue to serve our customers and patients in a time of great anxiety and uncertainty. ”

**Rob Hale**  
Senior Manager Infrastructure and Technical Engineering, Novant Health

# INNOVATION

We believe that rapid technological innovation is critical to our long-term success, and we are tailoring our investments to meet the requirements of our customers and market. Ribbon continues to invest in developing more trusted solutions for people and planet, addressing both new technology needs while reducing the environmental impacts of our products.

Our innovation programs span several current and emerging market trends to deliver holistic solutions for our customers in different industries and geographies.



In 2020, our investment in R&D amounted to

## \$194 million

(23% of total revenue)

### Market and Technology Trends

**Move to 5G**, overtaking current 4G and broadband technology, to deliver unprecedented speeds, communications capabilities and controls and new network architectures to transform many aspects of how we live today such as: e-mobility, telehealth, remote working, e-commerce and more.

**Move to cloud**, from centralized server-based networks, enabling energy efficiency, flexible utilization at speed, creation of private or public cloud networks for different applications or groups, and becoming the basis for extensive remote working and interactivity.

**Move to open networks**, from closed networks, meaning that existing networks can be used by several providers, rather than requiring networks limiting services to a sole network provider.

### Ribbon's Current and Future Solutions

- High-capacity IP Optical Networks
- 5G solutions including x-haul, Flex Ethernet, network slicing and optimization solutions, enabling customers to leverage the benefits of 5G in the most flexible, cost-efficient, secure and reliable ways.
- Cloud-native software for secure communications
- Software Defined Networking (SDN) and automation
- Network Functions Virtualization (NFV)
- Open, interoperable technology enabling best-of-breed approach, providing flexibility for customers to select the best applications and service for their needs without restriction
- High performance and cost optimized technology to enable open network functionality

## The Apollo Revolution



**““**  
**We’re working with commercial silicon and really trying to provide a much more open architecture, more interoperability between vendors. These systems have been very closed for a long period of time, and we want to be more disruptive, trying to open up the network architectures, both from a software perspective and from an interface or hardware perspective as well.**  
**””**

**Bruce McClelland**  
 President and Chief Executive Officer

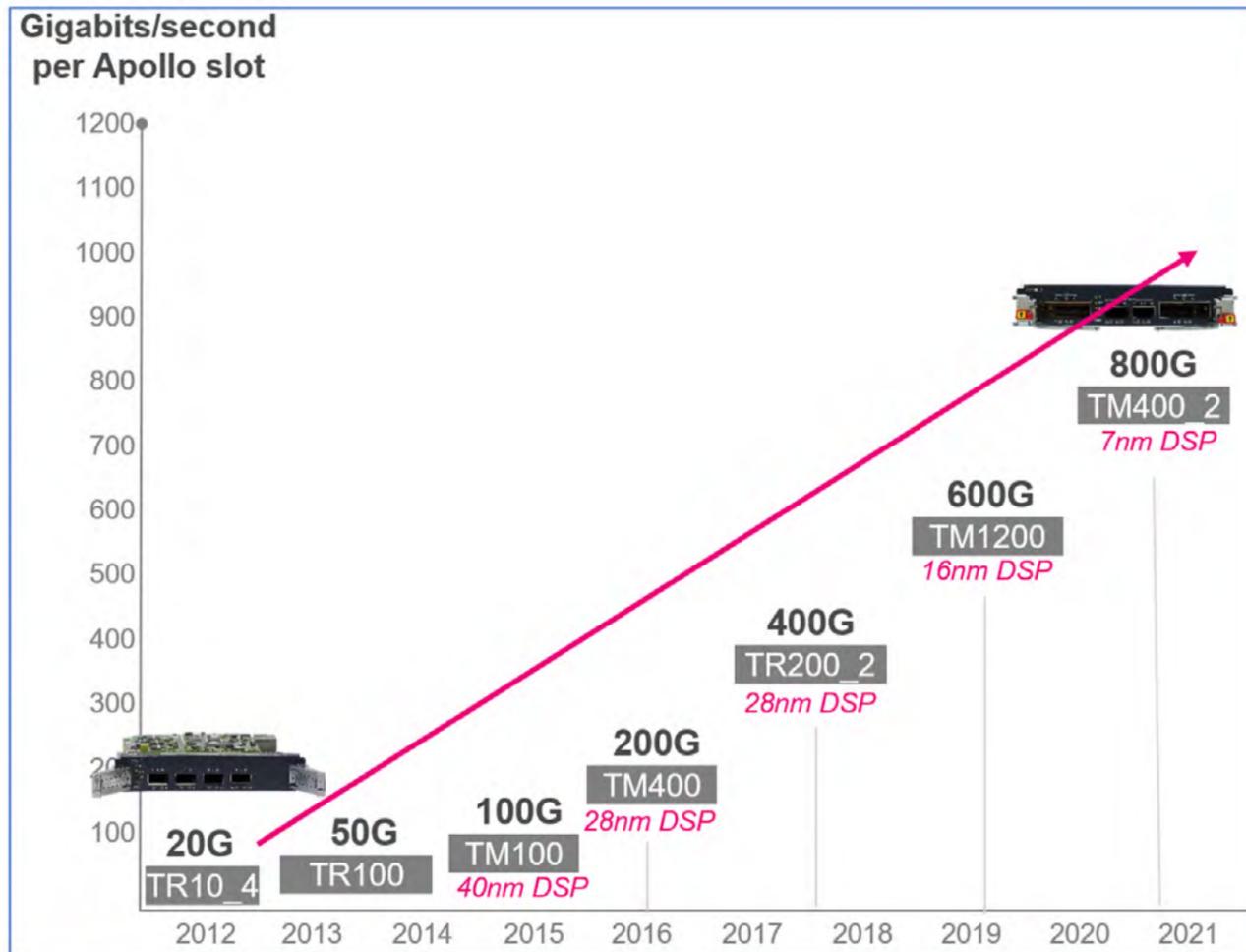
Apollo is Ribbon’s leading-edge family of optical transport and switching platforms that work together seamlessly to provide scalable, high-density, and energy-efficient solutions across metro, regional and long-haul distances. The platform is flexible and configurable in multiple ways to meet growing and shifting traffic patterns while offering complete security and high-level encryption. Apollo is an open system, meaning that it is vendor-agnostic and can fit into any existing network, avoiding the need to replace legacy hardware, enabling customized cost-effective solutions. Optical networks are a multi-billion-dollar industry, spanning data center connections, operator networks and fiber for critical infrastructure providers including railways and oil and gas companies.



For over 10 years, we have invested in optimizing our Apollo platform to deliver higher traffic loading while reducing the power needed to do so. In 2021, we introduced the TM400\_2 line card, designed for use in Apollo’s metro and long-haul optical transport system line. This high-end first-to-market technology allows optimal flexibility to deliver up to 800G of capacity with support for independently configurable traffic lanes for multiple customers with added cost efficiencies and network flexibility over embedded optical solutions.

**““**  
**With traffic loads increasing, our customers are looking for a revolutionary transport solution that meets today’s and tomorrow’s needs. We’re proud to be the first to market with this flexible, cost-effective solution.**  
**””**

**Sam Bucci**  
 Executive Vice President and General Manager,  
 IP Optical Networks Business Unit



The TM400\_2 adds to a long line of capacity improvements that deliver higher power-efficiency ratios.

Apollo continues to deliver higher optical capacity with significant DSP (digital signal processor) reductions to provide more traffic from each unit, with a 40-fold capacity improvement in 10 years.

**Overall, these improvements translate to 25 times more fiber capacity and 16 times less power per gigabit of traffic.**

Such innovation that offers both technology and environmental benefits reflects our ongoing approach at Ribbon, that we apply to our entire portfolio of Cloud & Edge and IP Optical networking solutions.

## Technology in a Pizza Box

Sometimes, just like pizzas, technology needs to be packaged to allow for rapid deployment with minimum physical bulk. In a proprietary development for the Swiss Armed Forces, we created a game-changing Optical Transport Network (OTN) switch (Apollo 9901X) that enabled a move from physical infrastructure to a flexible cloud-based solution that connects networks across all kinds of terrain at long distances without cabinets, cables and physical infrastructure. Our 9901X was a perfect mission-critical connectivity solution for the Swiss Armed Forces' complex network needs. Subsequently, we were able to offer this innovative technology to all our customers.

Our Apollo 9901X access OTN switch provides the benefits of a software-configurable solution with the cost efficiencies previously found only in manual options and physical installations with no engineering requirements. It can carry up to twenty business services on different service platforms with optical encryption for additional security, controlled via a common management interface.

With this technology, Ribbon is helping customers to significantly lower the cost per bit of network access, allowing providers to do more with less, while contributing to a more efficient, energy and resource saving solution that is good for people and good for the planet.



# SERVICE AND PRODUCT QUALITY

Ribbon customers know that they can rely on our trusted solutions to deliver the promised functionality as well as being compliant with regulations and leading global product standards, and with our strictest product quality standards.



## Product Compliance and Certifications

The ICT and electronics industries are becoming increasingly regulated across the product lifecycle from regulations defining acceptable material use to end-of-life disposal requirements. Ribbon is committed to complying with applicable environmental legislation and regulations in all countries. A selection of our main regulatory obligations includes:

- Restriction of Hazardous Substances (RoHS/ RoHS II/RoHS 3 Directives) in Europe and RoHS in China
- Waste Electrical and Electronic Equipment (WEEE) directive in Europe
- CE Marking designation – indicating compliance with EU legislation
- Batteries Directive – governing composition and disposal
- Packaging Directive - governing composition and disposal
- International Standards for Phytosanitary Measures No. 15 (ISPM 15)

In 2020, we organized our reporting tools to comply with new SCIP reporting in Europe. SCIP is the database for information on Substances of Concern In Products, established under the Waste Framework Directive. The SCIP database ensures that the information on products containing specified substances is available throughout the lifecycle of products and materials.

## Service and Operations Quality

We constantly monitor the quality of our service to customers against our quality standards and service KPIs tailored to our different business segments. Our sites regularly undergo external recertification audits. In 2020, for example, five of our Cloud and Edge sites in three countries were externally audited over a total number of 45 auditor days.

**Service quality:** We measure the quality of our service to customers against KPIs including on-time delivery as promised, lead-time for delivery, complete shipments and quality of product on arrival, measuring our performance against industry standards and internal targets to drive improvement of the customer experience. In our Cloud and Edge business in 2020, our aggregated customer experience score across a range of KPIs was more than 80%.

**Customer satisfaction:** Customers are requested to complete satisfaction surveys after each service event. In our IP Optical operations in 2020, we received approximately 400 customer responses that demonstrated customer satisfaction at a level of between 4.41 and 4.64 on a scale of 5. In our Cloud and Edge segment, customer satisfaction ranged between 9.15 and 9.28 on a scale of 10, ranking higher than industry averages noted in recent Technology & Services Industry Association (TSIA) Transactional Surveys.

### Our certifications:

- **ISO 9001:2015:** Quality Management System (QMS)
- **ISO 14001:2015:** Environmental Management System (EMS)
- **ISO 17025:2015:** Laboratory Testing Competency
- **ISO 27001:2013:** Information Security Management System (ISMS)
- **ISO 22301:2012:** Business Continuity Management System (BCMS) – our Business Continuity Management program is aligned to this standard but not certified.
- **ISO 45001:2018:** Safety Management System
- **TL 9000:R6.2/R5.6:** Quality Management System standard designed by the QuEST Forum in 1998. It was created to focus on supply chain directives throughout the international telecommunications industry. In 2020, we consolidated our TL 9000 Registration for our Cloud & Edge and IP Optical Networks under the Ribbon name, following the Ribbon and ECI Telecom merger.
- **SI 10000:2013:** Social Responsibility (Israeli Standard) covering our sites in Israel.

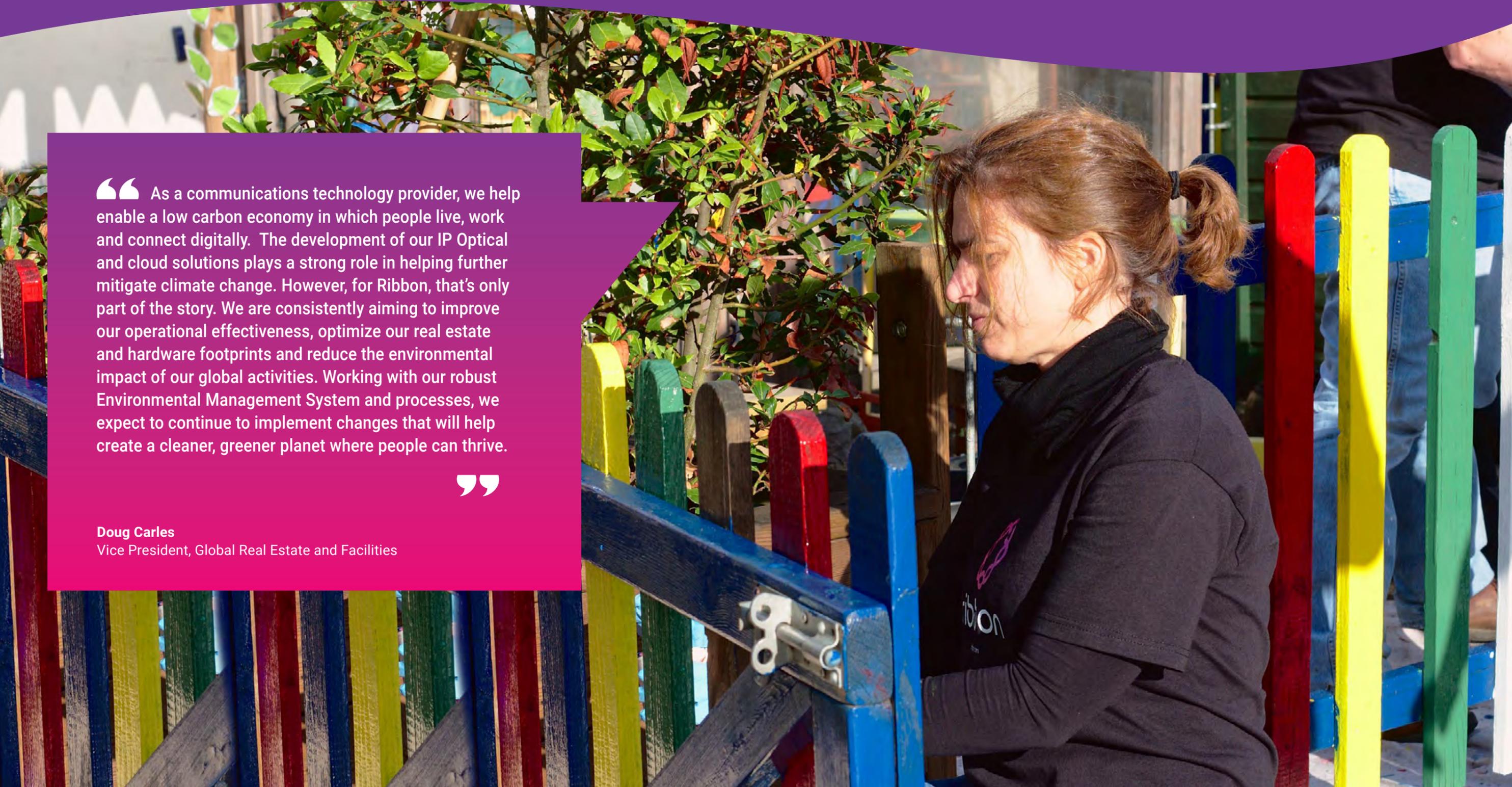
# ENVIRONMENT

“ As a communications technology provider, we help enable a low carbon economy in which people live, work and connect digitally. The development of our IP Optical and cloud solutions plays a strong role in helping further mitigate climate change. However, for Ribbon, that’s only part of the story. We are consistently aiming to improve our operational effectiveness, optimize our real estate and hardware footprints and reduce the environmental impact of our global activities. Working with our robust Environmental Management System and processes, we expect to continue to implement changes that will help create a cleaner, greener planet where people can thrive.

”

**Doug Carles**

Vice President, Global Real Estate and Facilities



# CLIMATE RESILIENCE

The most recent assessment of the United Nations Intergovernmental Panel on Climate Change (IPCC) indicates that: “emissions of greenhouse gases from human activities are responsible for approximately 1.1°C of warming since 1850-1900, and ... averaged over the next 20 years, global temperature is expected to reach or exceed 1.5°C of warming.”<sup>5</sup> To mitigate ongoing climate change impacts, governments

and business need to act with urgency to advance climate-positive solutions. Research shows that Information and Communication Technology (ICT) solutions have a calculated potential to reduce the global greenhouse gas emissions by up to 15%.<sup>6</sup> As a global player in this sector, we continue to contribute to the necessary global transition to a low carbon economy.

Beyond the benefits our technology brings to supporting climate-change mitigation, we have also committed to reducing the direct impacts of our own operations through our global value chain. See our [Environmental Policy](#). In 2021, with support of Ribbon’s Board of Directors, we have adopted a target to reduce GHG emissions by 30% by 2030.

**Ribbon targets to reduce direct carbon emissions by**

**30% by 2030**

**(Scope 1 and Scope 2 CO<sub>2</sub>e, from a base year of 2018)**

This target is part of our longer-term aspiration of achieving to Net Zero carbon emissions across our operations.



<sup>5</sup> <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>

<sup>6</sup> Research Brief ICT’s potential to reduce greenhouse gas emissions in 2030, Ericsson AB, 2019,

<https://www.ericsson.com/48d92a/assets/local/reports-papers/research-papers/icts-potential-reduce-greenhouse-gas-emissions-2030.pdf>

## Reducing GHG Emissions

We are currently forming detailed plans to ensure we deliver against our 2030 target. Given that electricity accounts for 80% of our total energy consumption worldwide, we will accelerate opportunities to reduce the impact of our electricity use in the following ways:

- Consider application of an internal carbon pricing mechanism as a basis for understanding relative performance across the company and decision making on operational changes
- Maintain energy efficiency measures supported by energy audits and implementation of identified potential energy savings
- Transition to renewable electricity where feasible at sites operated by Ribbon, including exploring, where possible, collaborative arrangements with owners of our leased sites
- Relocate certain sites or laboratories to locations with cleaner electricity profiles
- Consider carbon offsetting as a means to achieve net zero when all other options to reduce electricity consumption and other carbon savings are complete

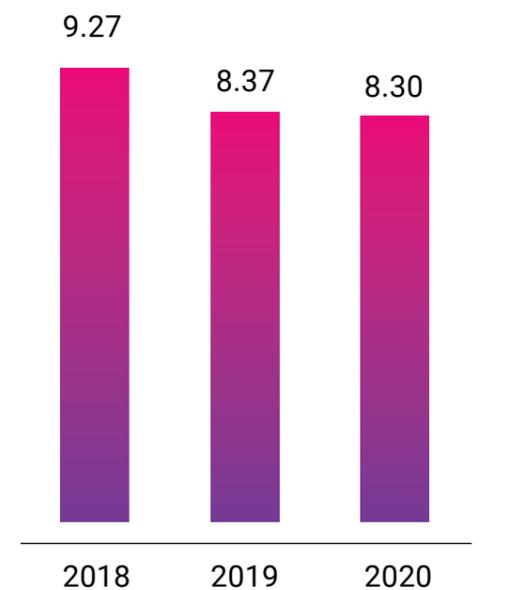
While our publicly stated target and climate aspiration are new, our actions in improving our climate performance over a number of years are evident in our emissions performance. In 2020, we reduced our greenhouse gas emissions by 9% on a square foot basis. Since 2018, our operational Scope 1 and 2 carbon footprint has seen double-digit reductions when normalized to the number of employees or to the square footage of our operations around the world.



**We have always been conscious of the need to save energy. However, given the increasing urgency of reducing global warming, and our long-term aspiration to become a Net Zero business, we are energized to go the extra mile to be a positive force for sustainable development.**

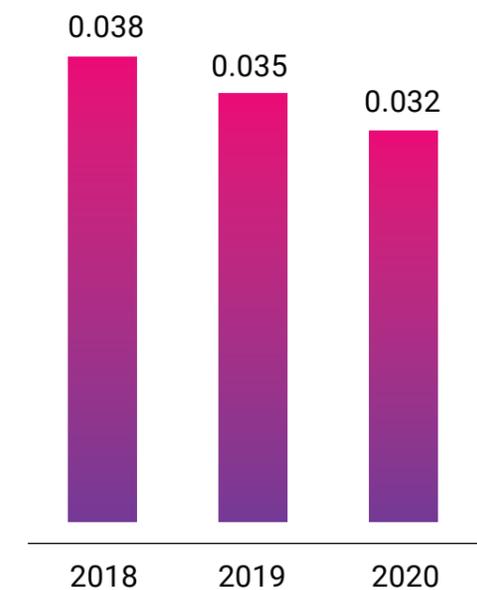
**Brian Green,**  
Director, Global Sustainability and Real Estate

↓ **10% reduction**  
in emissions in tons CO<sub>2</sub>e per employee since 2018



Emissions Intensity per Employee (MT CO<sub>2</sub>e)

↓ **17% reduction**  
in emissions in tons CO<sub>2</sub>e per sq.ft. since 2018



Emissions Intensity per Sq.Ft. (MT CO<sub>2</sub>e)

See [GRI Content Index: Material Disclosures](#) in the Appendix of this Report for detailed environmental performance indicators.

# DRIVING ENERGY EFFICIENCY AT OUR GLOBAL SITES

Ribbon continues to occupy multiple offices around the world. While some of these locations are sales and customer services locations, a significant number are designed to support complex Research and Development activities as well as Customer Support Operations. These multi-functional sites serve as Laboratories for software design and equipment testing & certification; Application Centers for interoperability testing of customer solutions; and Data Centers for running our internal operations.

What characterizes these multi-functional sites is the large amount of operational telecommunications equipment, in the form of server racks, cabinets, IT equipment along with supporting cables and components, operated in the labs at each of these facilities. Each of these sites therefore requires a steady supply of electricity to power the equipment and associated HVAC systems to maintain a climate controlled operational environment.

Over time, the requirements of each individual site may evolve, depending upon the nature of continued Ribbon product development as well as the volume of customer equipment required for interoperability testing. Similarly, efficiency opportunities arise through the transfer of data storage to the cloud to reduce physical hardware needs, and product development that reduces equipment size.

For the past several years, Ribbon has added sites and laboratory equipment with the ongoing evolution of our product offerings, as well as through acquisition of new technologies. Throughout this continual evolution, we have succeeded in supporting our business operations and our customer needs, while minimizing our

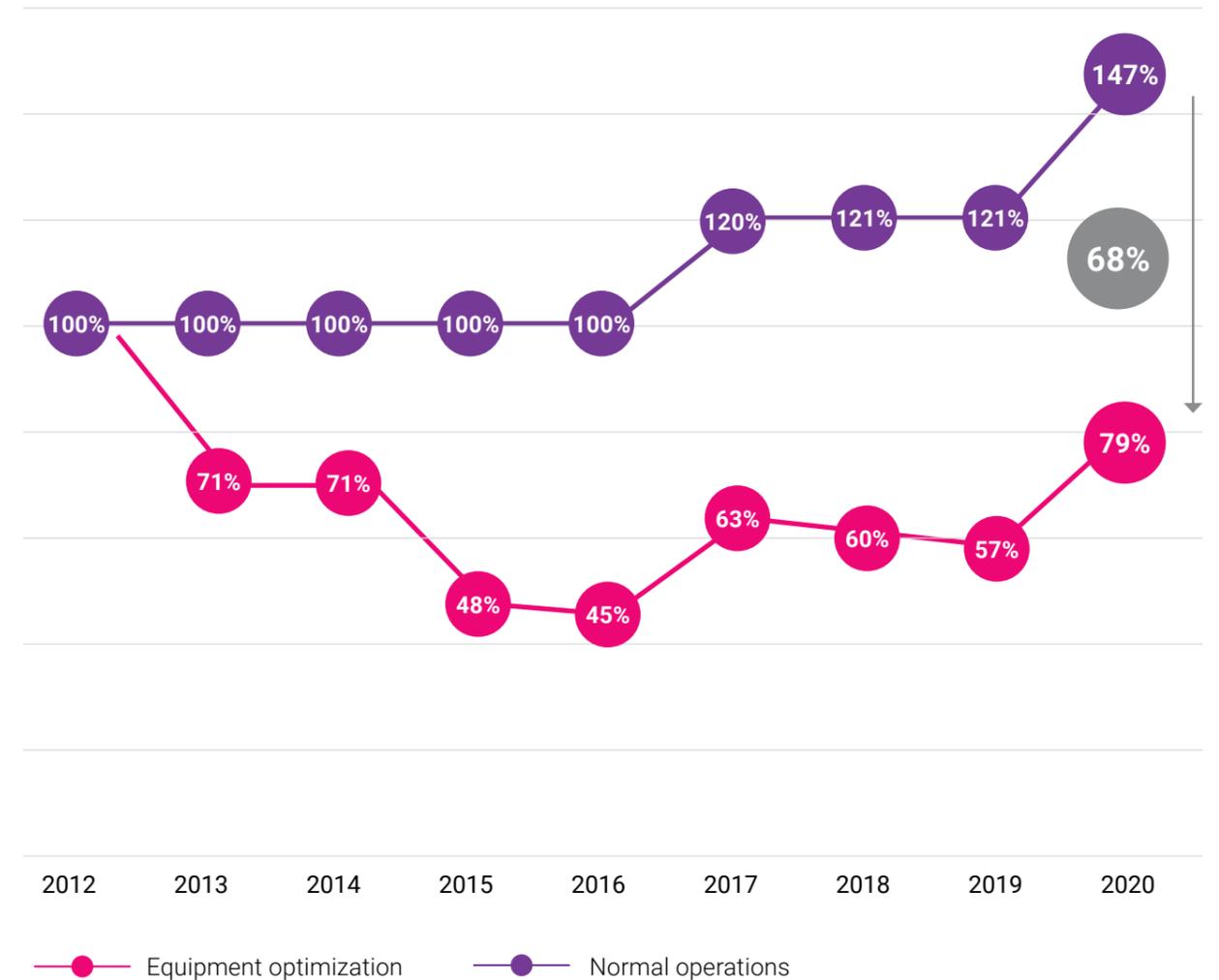
laboratory and data center space and reducing our overall energy consumption. Wherever possible, we consolidate equipment into fewer sites, partly to accommodate testing in proximity to our customers for ease of collaboration, and partly to make best use of available space within our Ribbon offices.

Since 2012, while evolving our product offerings and growing our business, we have reduced the number of equipment racks in our laboratories and data centers by more than 21% with our ongoing equipment Optimization Program and site consolidations. Conversely without these optimization efforts, the number of equipment racks and their associated power consumption would have increased by 47% over the same period of time.

**The cumulative effect of our Optimization Program has been a net reduction of 68% of our equipment and laboratory space since 2012.**



## RIBBON'S EQUIPMENT OPTIMIZATION PROGRAM



**Note:** Increases in 2017 and 2020 are due to sites added through acquisitions. Optimization activities will continue into 2021 and the future.

The effect of this Optimization Program in terms of energy consumption is considerable, both in terms of improved efficiencies at each site, and an overall lower number of multi-functional sites. **In the past four years alone (2017-2020), electricity consumption across our global footprint has reduced by 20% per sq.ft., which we attribute largely to our site consolidation program.**

# RESOURCE EFFICIENCY IN OUR SUPPLY CHAIN

We aim to deliver resource efficiency throughout our entire product lifecycle, starting with identification of requirements for our development teams through to responsible end-of-life management of our products. Our hardware products are designed for long life use, including features for reparability of components and spare part availability. We expand the usability of our hardware by adding software components. Where possible, at end of use, we redeploy hardware from customers back to our sites for use by our R&D teams.

At each phase, we consistently examine our resource requirements to drive efficiencies up and environmental impacts down. For example, we have consistently reduced the physical size of our components while maintaining or increasing their capacity. See section: [The Apollo Revolution](#) for an example of efficiencies achieved in our IP Optical systems.

Most of our operations are covered by our Environmental Management System (EMS) that is certified to ISO 14001, and we frequently conduct audits to examine both our compliance with all legal, regulatory and customer requirements.

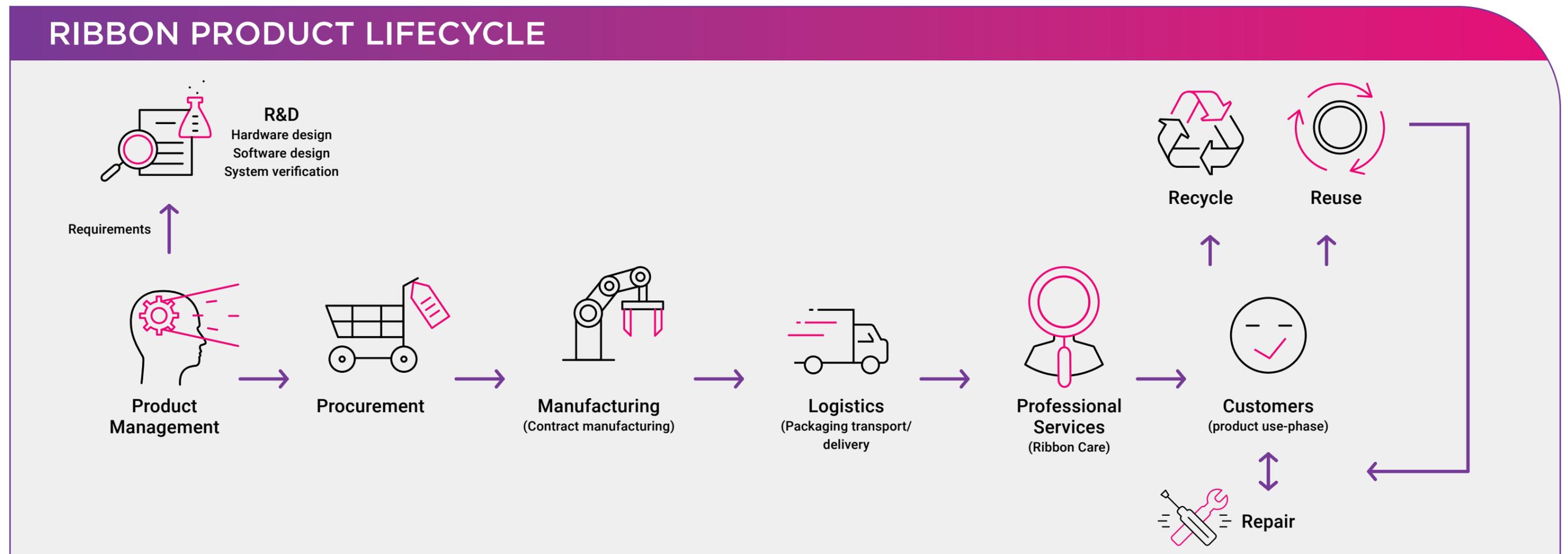
We also advance efficient practices and improvements that are in line with internal targets for each site. In 2020 we completed 10 internal EMS audits and identified not only minor corrective actions but also an opportunity to remove single use plastics from many of our sites.

**Optimizing logistics:** We aim to minimize the environmental impact of our logistics by reducing the travel distance of shipped components between warehouse locations and customer premises and increasing land rather than air shipments. We collaborate with our customers and sales teams for accurate and early forecasting

for effective planning of optimal shipment loads. In our IP Optical operations, for example, 83% of all shipments in first quarter of 2021 were full shipment loads versus 77% in the prior year. Wherever possible, we aim to source components locally, in the country of the assembly operations, to minimize our inventory and carbon footprint through optimized logistics.

**Packaging:** We procure recycled, repurposed and reused packaging materials and promote a zero-waste manufacturing model of closed-loop repair and return services through our contract manufacturers.

## RIBBON PRODUCT LIFECYCLE



# SOCIAL



“ Although our business is communications technology, it’s really about people. The social advancement enabled by our technology can be seen in the ways people live, work and connect, and in the sustainability of the planet. As a team inspired to deliver solutions that create social benefit, we are also committed to making Ribbon a great place to work and positive corporate citizens within our communities. ”

**Petrena Ferguson**  
Senior Vice President, Human Resources

# TEAM RIBBON

Given Ribbon's rapid growth through mergers and acquisitions over several years, we continue to focus improving our One Team approach, aligning around a work culture that reflects and expresses our values, with global processes and platforms that enable us to work efficiently across borders and functions. For example, in 2021, we completed the migration of our human

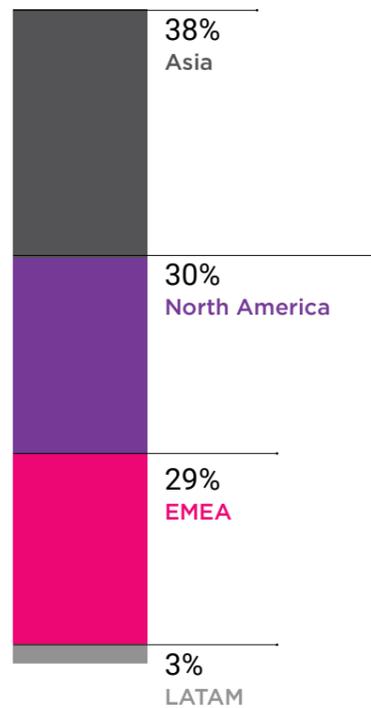
capital management system to include all Ribbon divisions, including our IP Optical division that became part of Ribbon in 2020. As a result, Ribbon employees everywhere now have the same access to human resources tools and information, including performance management, training and compensation and benefits.

We aim to create a workplace that is engaging, inspiring, challenging and inclusive. We strive to be an employer of choice for our current employees and for future employees who are seeking an opportunity to join our dynamic business, positioned at the nexus of global communications technology and social transformation.

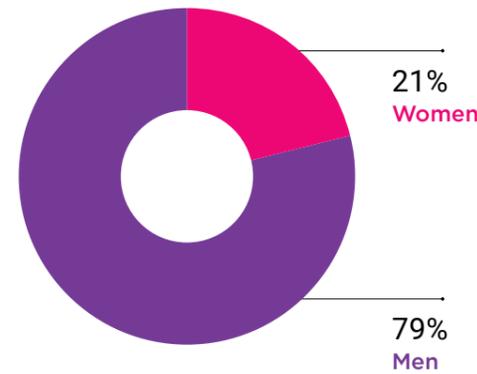
## Employee Benefits

We believe in fairly and competitively rewarding and recognizing our employees. As a global company, we maintain a program of benefits tailored to local market norms in each region to support employees with medical insurance, paid leave and other non-salary benefits. For example, in the U.S. and EMEA, we maintain a RealTime Rewards program to enable recognition of employee achievements and contributions. This online program allows anyone to nominate a colleague for recognition. In 2020, almost 1,000 RealTime Rewards were delivered to employees who received a cash benefit of between \$25 and \$100, or other non-monetary recognition.

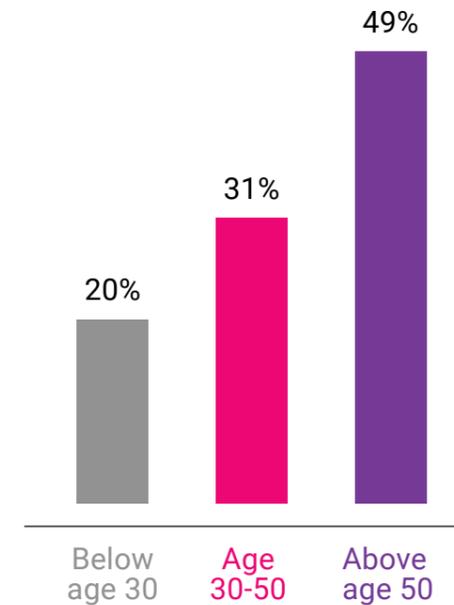
EMPLOYEES BY REGION IN 2020



EMPLOYEES BY GENDER IN 2020



EMPLOYEES BY AGE IN 2020



## Employee Engagement

We encourage the active participation of Ribbon employees in shaping our human resources processes and contributing to our overall team success. Engagement takes various forms, and in the past year, several initiatives were undertaken.

### Employee experience survey

In December, we asked all employees to participate in an Employee Experience Survey to gain insights on how satisfied, dedicated and invested they are in Ribbon, and understand their key issues. The survey included questions on how the COVID-19 pandemic affected them and their work. The response rate was 64%, demonstrating our employees' enthusiasm to support our ongoing efforts to help ensure Ribbon is an employer of choice and a valued place to work.

Key takeaways from our employees included:

- The need for more training in the areas of leading-edge technologies and leadership development
- A desire for a deeper understanding of the Company's strategy
- A desire to get to know our leadership team better and hear more from them directly about our business.

Following the survey, in response to our employees' requests, we created a new program to engage our leadership team more directly with the global Ribbon workforce. The "Up Close and Personal with your Senior Leaders" initiative encompasses a series of live video events

### Meeting our CEO ... virtually

During the pandemic, our CEO, Bruce McClelland's visits to Ribbon company sites and local teams were replaced with a virtual tour. To date, Bruce has visited all of our major sites and regions, attending day-long virtual visits in India, Europe, China, Israel, U.S., Canada, and Asia Pacific, allowing local management teams and employees to meet the CEO, hear business updates, share their perspectives and engage in discussion.

### New tool for internal communications

In our continued efforts to improve our internal communications capabilities and enable effective two-way communication, we commenced testing Yammer as our organizational communication network. Yammer, part of the Microsoft Teams platform, is planned for global implementation, to allow team members to interact freely with each other across organizational levels, function and geographies, learn, share and play an active role in our Ribbon One Team community.

with members of our executive team in which they share personal anecdotes, professional perspectives and respond to employee questions. To date, most of the executive team have recorded videos that are accessible via the Ribbon Intranet.

## Employee engagement committees

This year, we created Ribbon Engagement Committees, employee-led groups in each of our major locations, charged with delivering programs of locally relevant activities and events that facilitate networking, enable exchange of ideas and help enhance employee satisfaction, productivity and engagement in local communities. All employees are welcome to join and currently hundreds of employees are volunteering their time serving on local committees and playing a role in advancing our

inclusive and collaborative working culture. Our first globally activated campaign of the Employee Engagement Committees in 2021 was "Go Green – Ribbon Cares", in support of World Environment Day. The campaign offered employees a variety of webinars, tips and ideas on how to become more eco-conscious, encouraged each Ribbon site to commit to at least one act of eco-friendly kindness and urged employees to join our Go Green Taskforce (see section: [Environment](#)).



## Learning and Development

We are continuously working to create enhanced opportunities for personal growth and development through training and educational resources. In 2021, we completed the major task of creating a unified online platform for enterprise learning, migrating training materials from all learning sources to an entire learning library which is available to all Ribbon employees. Annually, we conduct a systematic Learning Needs Assessment using information relating to business and organizational development needs, employee performance development reviews and employee surveys. Using this tool, an annual learning and development program is created.



### Onboarding

We believe in starting right at Ribbon from Day 1. Every new employee receives a Welcome Pack which contains important information for orientation within the company and new work environment. The Welcome Pack includes an introductory module on sustainability topics.

### iGROW, iLEAD and iTECH

We believe that one of the best ways for employees to grow professionally is to hear from others in different parts of Ribbon, learn from their experience and guidance and engage with them in live interactions. Our iGROW and iLEAD programs, accessible to all employees globally, delivers live educational and inspirational webinars, designed to help employees gain a deeper knowledge of Ribbon's business and technology and acquire insights for performance improvement in different aspects of professional leadership and effectiveness. Through 2020 and early 2021, we conducted 17 live sessions which drew participation of more than 300 managers and employees per session from all parts of Ribbon.

The iTECH program is specifically designed for Ribbon's technology and R&D teams and is complementary to our existing iGROW and iLEAD programs. iTECH offers live-training sessions in a variety of educational areas, focusing on the latest technology developments. It is designed to improve our technology teams' professional skillset and allow them to maximize their potential by leveraging their learning to deliver best-in-class products and support to Ribbon customers.

### Learning and development by the numbers in 2020



**17**  
live learning webinars delivered



**5**  
new online tutorials on different topics



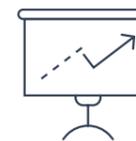
**2,000+**  
employees attended learning webinars



**1,200+**  
employees undertook self-directed learning programs



**4**  
new learning programs launched



**750+**  
training courses available



**4.5 / 5 (90%)**  
satisfaction score across all virtual training

## Leadership development

We continuously enhance and expand our leadership programs. In 2021/2022, we will launch two new leadership development programs:

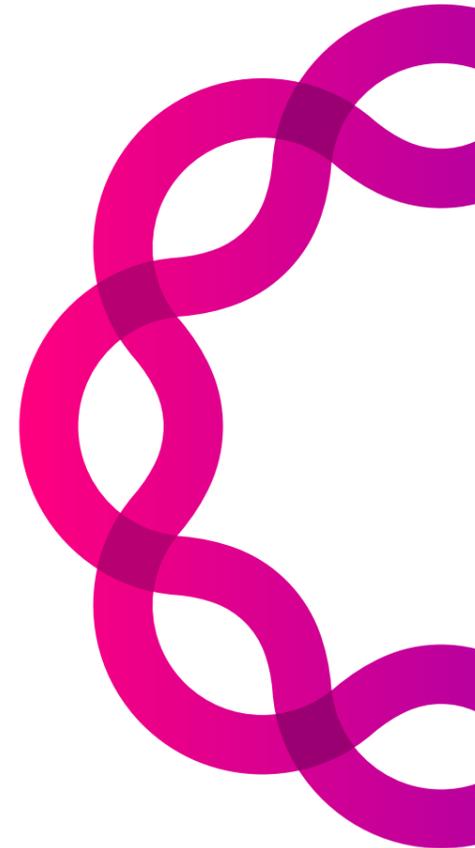
**Leadership program by level:** This is for first line, mid-level and senior leaders, with each program providing 4 – 6 learning modules to develop holistic leadership. The programs will be delivered by external experts who are familiar with leadership development in a technology environment.

**Women's leadership:** This is a new program consisting of five pillars:

- Expanding awareness of impact of unconscious gender bias by managers in decision-making and acquiring practical tools to address obstacles that impact women negatively in the organization
- Dedicated program to empower and strengthen skills, expand networking and face challenges
- Talent management with an annual review of career potential and opportunities for senior women
- Mentoring
- Round tables by senior women leaders

## Online learning platforms

In 2021, we launched our new Online Learning Platforms, following feedback from our employees that there is a strong demand for online learning solutions with the convenience of self-paced programs that can be accessed anytime from anywhere. Our Online Learning Platforms include three programs: Udemy, Pluralsight and Open Sesame. Our goal is to provide personal annual licenses to as many Ribbon employees as possible and enable them to enhance their knowledge on topics related to their role and professional goals. We encourage employees to discuss these programs with their managers and take advantage of this channel as a critical learning opportunity.



## Diversity, Equality and Inclusion (DEI)

We believe that having a diverse group of people who contribute different perspectives and viewpoints is a serious competitive advantage and critical to the success of any organization. We are therefore committed to fostering and maintaining a diverse workforce and a culture of inclusion. We are encouraged by results of our 2021 Diversity Survey in which we asked employees about aspects of diversity.



**We must harness all available talent to ensure Ribbon is future-fit. Advancing women in our business means tapping into a broader pool of global talent. This will contribute to our business success and also make an important contribution to a more equitable society. In 2020, women represented 16% of managers at Ribbon, so our target is ambitious, but we are determined to break down traditional barriers to welcome a more diverse workforce in a more inclusive culture.**



**Patrick Macken**

Executive Vice President and Chief Legal Officer

Our Diversity, Equality and Inclusion (DEI) strategy's initial focus is on achieving stronger representation of women in a variety of roles at all levels of the organization, with an emphasis on women in management. A targeted effort will be required to achieve our initial objective of 30% of management roles<sup>7</sup> to be held by women by 2025.

### Employee Diversity Survey – key responses:

**89%**  
of employees feel comfortable working at Ribbon

**87%**  
of employees agree that employees appreciate others whose gender, backgrounds and beliefs are different from their own

Attracting women to technology careers has traditionally been a challenge, and we recognize the need to accelerate the hiring and advancement of women at Ribbon. To support our efforts, Patrick Macken, Executive Vice President and Chief Legal Officer, and Petrena Ferguson, Senior Vice President, Human Resources, are sponsoring the Ribbon Diversity Council that will develop the DEI strategy and create initiatives to deliver stronger diverse representation at Ribbon. Such initiatives include:

- **Women-friendly hiring:** Improving outreach to women through a range of channels, enhancing interview skills to remove bias and fostering openness to hiring women to traditionally male-dominated roles. New internal mobility and referral policies will encourage women to apply and be considered for open positions, and recommend other women to do the same, or consider joining Ribbon. We have instituted a requirement for a minimum number of women candidates for each available position during the recruitment process. We have made progress in early 2021, with women being 20% of our new hires in the first half, with an objective increase the rate of women hires to 25%. With more focus, manager training and establishing relationships with organizations that support attraction of diverse candidates, we expect to exceed our target in 2021.
- **Development tools:** Expanding options for professional and leadership development for women, through training, mentorship and other leadership development programs.

- **Inclusive dialogue:** Raising awareness at all levels of the organization to encourage an understanding of more balanced representation of women and other under-represented groups across the company; to make diversity part of our everyday conversation. Our plan includes a new global annual event, Ribbon Global Diversity Day, and several additional cultural awareness initiatives throughout the year.

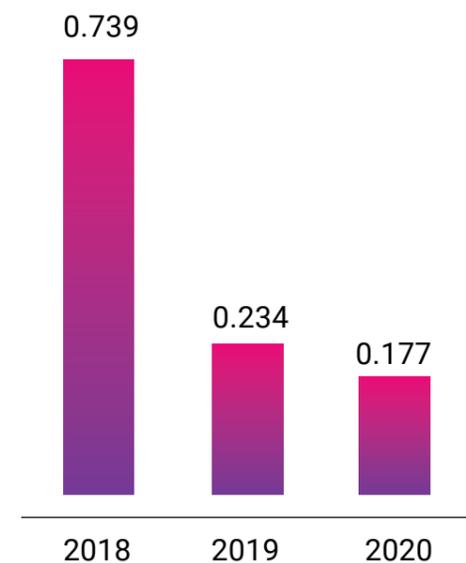
**Ribbon's inaugural annual Global Diversity Day was held in 2021 to engage employees in inspiring dialogue led by expert guest speakers on topics such as gender equality in the workplace and personal accountability for diversity. We also celebrated Pride Month, encouraging our employees to embrace our differences and promote inclusion and belonging.**

<sup>7</sup> We define management roles as those with responsibility for managing people.

## Employee Safety

Ribbon aims to create a workplace that is safe from all hazards and enables employees to conduct their work without fear of injury or illness. We take care to ensure our workplaces comply with applicable safety regulations wherever we work and promote a culture of safe working and collaboration to eliminate work hazards. We reinforce safety awareness and safety risk management through regular training at all our operating locations. Over the past three years, our injury rate has continued to decline with the majority of our locations being injury-free during 2020.

### INJURY RATE PER 100 EMPLOYEES (employees and contractors)



**Employee safety through the pandemic:** In 2020, as a result of the COVID-19 pandemic, we took a number of steps to help ensure the safety and well-being of our employees. This included closing our offices and transitioning most employees to work from home. We instituted a phased plan that provides for a gradual return of employees to our locations based on the local conditions and regulations. In our offices, we increased sanitation, implemented a policy of wearing facemasks and limited the number of people allowed in common areas and conference rooms. We provided regular updates for our employees and created a COVID-19 resource site for them that includes information on working from home and links to official resources from the World Health Organization, the Centers for Disease Control and others.

Additionally, we conducted a Work-From-Home assessment via interviews with employees and their managers, reviewed by Human Resources Managers, to establish that employees were able to work from home in appropriate and safe conditions. We offered employees equipment for use at home and provided roadside pickup points for them to safely collect what they needed. Most employees working from home completed an assessment, including 100% of those who raised a concern. We were able to meet all demands to enable employees to make this transition in the most accommodating way possible.

**Note:** In 2020, many of our offices were closed for long periods of time, or only partially populated. We believe that this reduction in injury rate is reflective of our continued focus on safety, but we are not complacent and await a true comparison of performance when our offices and laboratories revert to being fully populated.

## Health and Wellness

We continue to seek innovative ways to encourage our employees to take care of their health and wellness. In 2020, our inaugural “Better Together” wellness month aimed to promote mental and physical well-being, engaged more than 1,300 employees from all regions in activities related to health and nutrition, sport, stress management, mindfulness, resilience, parenting during COVID -19, and financial wellness. More than 11,000 individual activities were completed by employees during wellness month. We are currently planning our next wellness month global campaign which is targeted to take place in 2022.

We are committed to supporting our employees to maintain their physical and mental well-being, a need that was heightened during the ongoing COVID-19 pandemic. We created a new portal containing Ribbon Health Tips to help team members recognize and address potential health issues. Further, we conducted several training sessions for employees and managers aimed at providing information and tools to help them cope with the complex situation of social distancing, prolonged work from home and coping with feelings of isolation, loneliness and anxiety.

### HEALTH AND WELLNESS TRAINING TOPICS

<b>For all employees</b>	Emotional resilience	Identifying and preparing for challenges
	Understanding the absence of face-to-face interaction	Motivation and self-discipline
	Mental health	Overworking and work life balance
<b>For managers</b>	Remote leadership	Transition to remote work and virtual collaboration
	Hosting great online meetings	Trust and confidence within teams
	Rewire and re-orientate	Promoting holistic wellbeing in the teams

# COMMUNITY INVESTMENT

We aspire to help create a better quality of life in the communities in which we live and work. We encourage our employees around the world to engage in community service and play an active role in local life.

## Our Global Day of Service

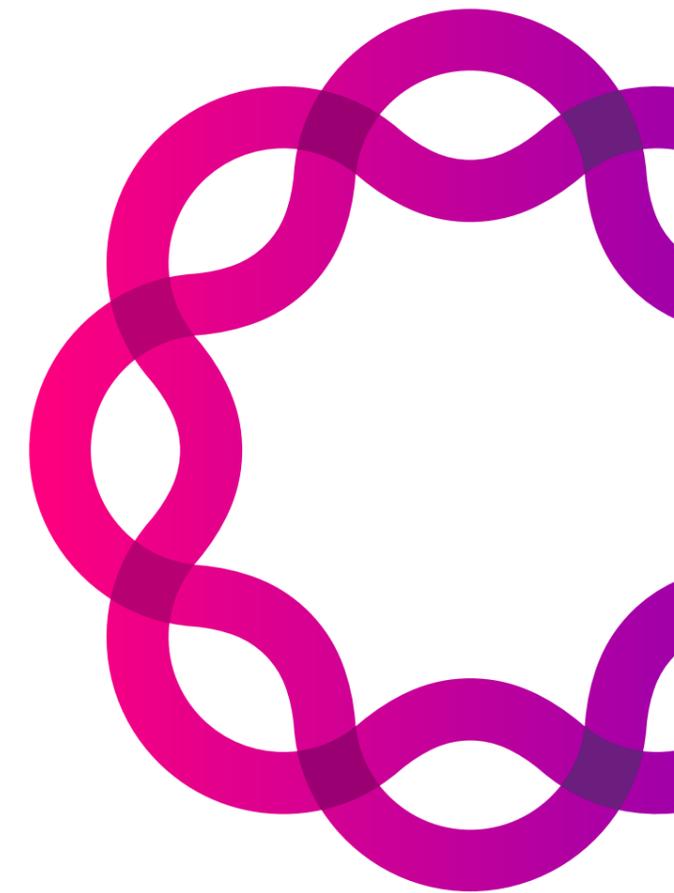
Since 2010, Ribbon has provided a day of paid time off for all employees to participate in our Global Day of Service during which they volunteer and contribute to local nonprofits in their communities. Our teams support a wide variety of local, social, and environmental causes, including:

- Park, nature reserve and beach cleanups
- Charity runs for fundraising
- Blanket making for women's shelters
- Food preparation for school breakfast, lunch and after-school programs for children in need, and at homeless shelters
- Visits with the elderly at nursing homes
- Animal shelter support and activities
- Volunteering at Paralympic events

Our most recent Global Day of Service in 2019 saw the involvement of Ribbon employees in 17 countries, volunteering a total of 4,400 hours of time in our communities and supporting 60 nonprofits advancing social and environmental causes. Due to the COVID-19 pandemic, we were not able to organize a Global Day of Service in 2020, although many employees still found ways to support in their local communities. We are currently planning our next event which will take place in late 2021.

During 2020, we engaged in communities where possible, including:

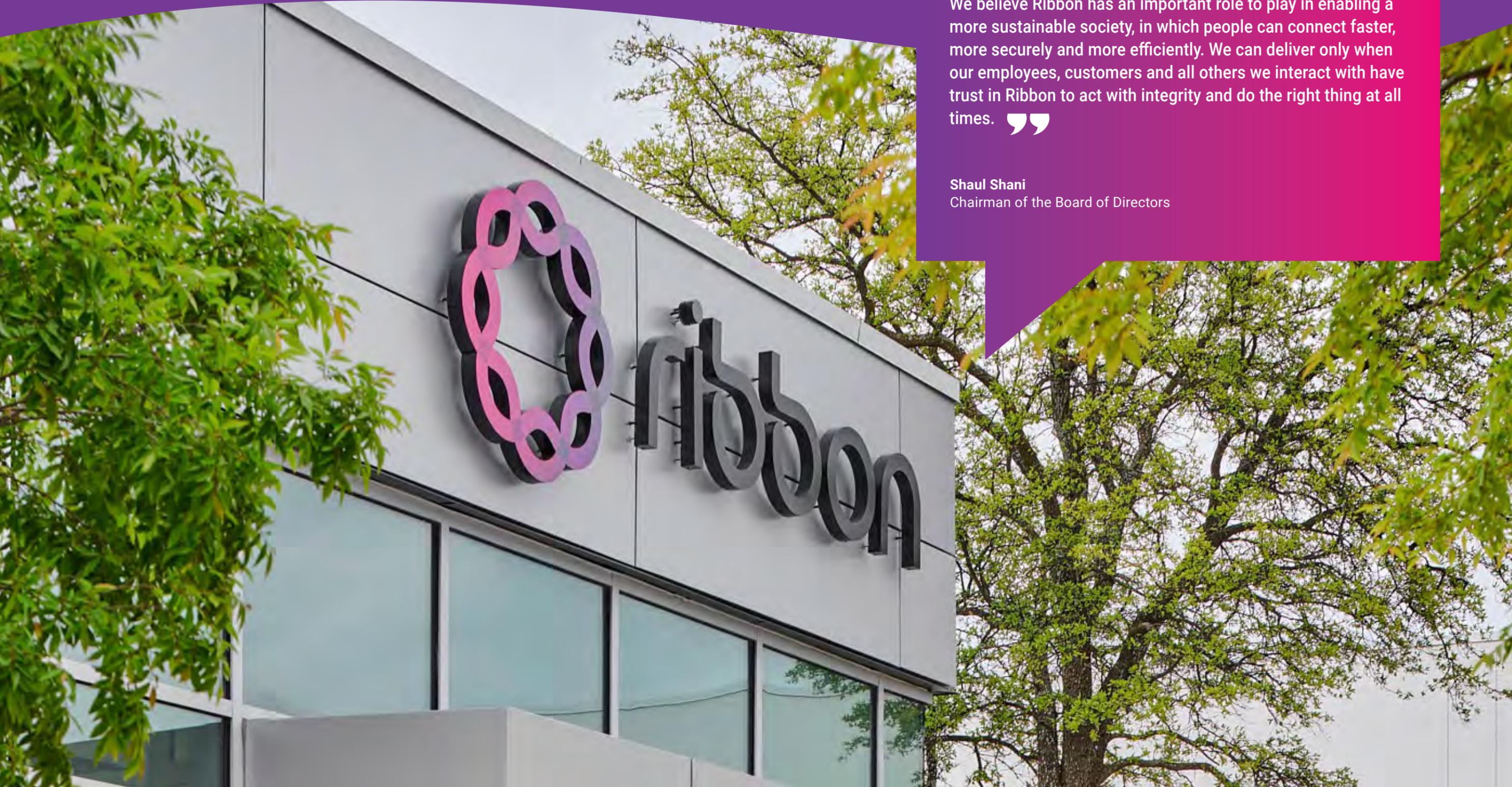
- Our team in Madrid, Spain, partnered with a local supplier to fund and provide portable battery packs for temporary COVID-19 hospitals, allowing patients and staff access to charge mobile phones, portable devices and medical equipment during the first wave of the COVID-19 pandemic.
- During an ice storm, our team in Plano, Texas ran a food and essential item drive and coordinated a company match for local residents in need.



# GOVERNANCE

“ We aim to be an exemplary business in all that we do. We believe Ribbon has an important role to play in enabling a more sustainable society, in which people can connect faster, more securely and more efficiently. We can deliver only when our employees, customers and all others we interact with have trust in Ribbon to act with integrity and do the right thing at all times. ”

**Shaul Shani**  
Chairman of the Board of Directors



## Corporate Governance

We are committed to strong corporate governance practices, which include building long-term value and assuring the success of the company for our stockholders and stakeholders, including employees, customers, suppliers and the communities in which we operate. To achieve these goals, our Board of Directors is charged with monitoring the performance of the company and its officers as well as its programs and procedures to ensure compliance with law and our overall success.

### Board composition

As of July 2021, our Board consists of nine directors, one of whom is employed by Ribbon in the position of President and Chief Executive Officer. In total, our Board of Directors includes 44% diverse representation: two Board members are women (22%) and two (22%) are underrepresented minorities.

### Board committees

Our Board has three standing committees: the Audit Committee, the Compensation Committee, and the Nominating and Corporate Governance Committee. Each committee is composed entirely of independent directors as defined under applicable rules, including Nasdaq rules. All members of the Audit Committee meet the independence requirements of Rule 10A-3 under the Exchange Act and all members of the Compensation Committee meet the heightened independence requirements for Compensation Committee members under the Nasdaq rules.

### Board engagement on sustainability

Our Board is fully committed to ethical conduct and corporate sustainability. Sustainability is an agenda item at each Board meeting and the Board reviews our approach, strategy and guides future direction. During the past year, the Board has been a critical partner in reviewing our revised approach to stakeholder engagement and materiality and continues to support the development of our strategy and sustainability goals and targets.

For more about our Corporate Governance, see:

<https://investors.ribboncommunications.com/corporate-governance/governance-highlights>

For more about our Board of Directors, see:

<https://ribboncommunications.com/company/about-us/board-directors>



*Patent wall at Ribbon's HQ in Plano, Texas.*

## Ethical Conduct

We believe that the principles of integrity, accountability and fair dealing are critical to our trusted relationships throughout the business and our interactions, and to our future success. Our [Code of Conduct](#) was reviewed and amended by our Board of Directors in 2020 and remains in force for all directors, executives, managers and employees.

During the new hire onboarding process, Ribbon employees certify that they have read the Ribbon Code of Conduct and confirm their agreement. All current employees are required to complete the Code of Conduct training and re-certification each year via our online learning management system to track compliance. In 2020, employees new to Ribbon completed their Code of Conduct training and certification. In 2020, 100% of employees completed Code of Conduct recertification, monitored by our internal audit team.

**In 2020, more than 8,000 hours of training in our Code of Conduct, human rights, anti-corruption and anti-bribery were completed by Ribbon employees.**

In addition, we provide compliance training to employees throughout the year, with a strong focus on anti-harassment, anti-discrimination and anti-bribery and corruption. We also maintain a hotline for reporting of suspected breaches of our Code of Conduct, managed through a third party,

and we encourage reporting by employees without fear of retaliation. In 2020, we did not receive any reports through our hotline.

**In 2020, Ribbon was not subject to any fines or sanctions relating to anti-corruption and there were no reports of suspected or actual breaches of our anti-corruption policies.**

Ribbon also publishes an annual [Slavery and Human Trafficking Statement](#) that meets the requirements of the UK Modern Slavery Act and the U.S. California Transparency in Supply Chains Act and other legal provisions. In 2020, Ribbon did not receive any employee or supplier reports alleging slavery or human trafficking in Ribbon's workplace or supply chain.

### Ethical supply chain

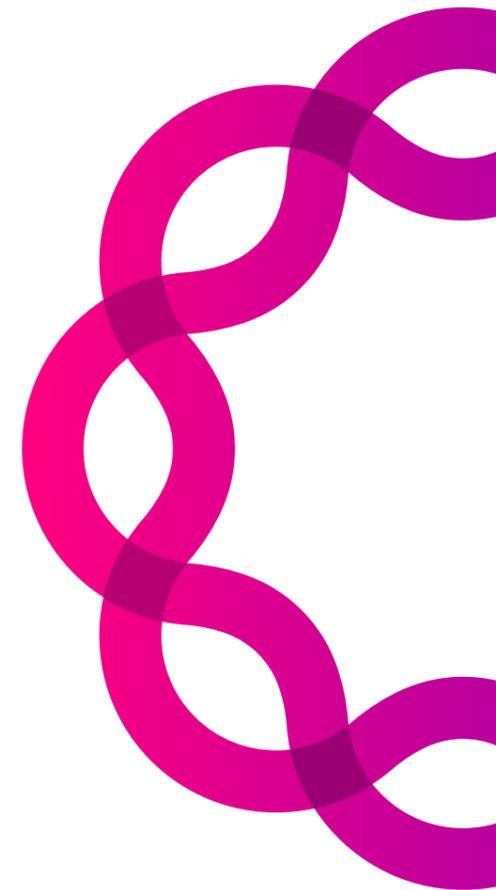
We seek to maintain a high quality, lean and ethical supply chain which aligns with our core values and sustainable business strategy. Given that production of all our components is outsourced to third-party contract and original design manufacturers, it is critical that we maintain trusting relations with responsible and reliable organizations that we view as an extension of our own Ribbon family. This is the case with our key manufacturing suppliers, that account for the

vast majority of our supply chain vendor spend in a given year.

**>90% of our supply chain expenditure is with a small number (<10) of strategic contract manufacturers and integrators.**

At Ribbon, we expect our suppliers to uphold the standards of ethical conduct, labor and human rights protection and environmental stewardship both in the spirit and to the letter of our [Supplier Code of Conduct](#). We conduct quarterly business reviews with our key suppliers in which we review their compliance with quality certifications and service standards, as well as sustainability and corporate responsibility matters.

Our primary third-party manufacturers whom we have long-standing relationships include Flextronics, Sanmina Corporation and Hawkeye Tech, large reputable companies that confirm adherence to our [Supplier Code of Conduct](#) and maintain strong sustainability and corporate citizenship programs in their own right. We maintain a regular quality audit program with our strategic contract manufacturers; in 2020, audits were conducted virtually.



## Risk Management

At Ribbon, we believe that innovation and leadership are impossible without taking risks. We also recognize that imprudent acceptance of risk or the failure to appropriately identify and mitigate risks could be destructive to stockholder value. The Board is responsible for assessing the Company's approach to risk management and overseeing management's execution of its responsibilities for identifying and managing risk. The Board exercises its responsibilities through discussions in Board meetings and also through its committees, each of which examines various components of enterprise risk as part of its responsibilities.

Generally, strategic risks, including risks relating to the COVID-19 pandemic and its impact on the Company, our employees, customers and suppliers, and the risks related to management delegation are overseen and evaluated by the full Board. Other risks are overseen by the relevant Board committees.

In our annual risk assessment process, we review the business impact of risks and assign likelihood and impact scores to rank risks from different areas of our business; environmental risk, business continuity, security risk, privacy risks, data access risk, health and safety risks and others.

In 2020, we implemented a new risk tracking tool to manage all corporate risk information in a single location and rank the risks using the same methodology with input from managers across different functions. The new tool allows risk management information to be reviewed efficiently by our Board and demonstrate appropriate resource allocation to risk mitigation. In 2021, we are introducing a centralized, standardized risk documentation process to align procedures around the organization and enable more consistent use of our enterprise risk tracking tool.



## Business Continuity

Ribbon actively maintains a Business Continuity Management System (BCMS) to ensure stability of all global operations following a potential disruption or catastrophic event, such as a natural disaster, pandemic, cyber-attack, or other similar events within the supply chain. The BCMS defines procedures to limit the impact from the loss of key service and product delivery.

Our BCMS is mandated by Ribbon's Executive Management Team and aligns with the requirements of the ISO 22301:2019 Standard. Each year we perform Business Impact Assessments (BIA) and each quarter, business continuity drill exercises based on catastrophe or disaster scenarios.

Our robust approach to business continuity allows our customers the peace of mind that they will also be able to continue to function during a disruptive event. We receive many inquiries from our customers about our BCMS and in 2020, more than 50 customers downloaded our BCM certificates.

Through 2020, we applied our business continuity experience and frameworks to disruption caused by the COVID-19 pandemic and were quickly able to convert many of our support services to remote platforms to enable customers to handle increase demand and resolve issues as they arose.

## Information Security and Data Privacy

At Ribbon, we are committed to protecting the personal data of our customers, partners, suppliers, affiliates and employees wherever we conduct business around the globe. We apply industry best practices for information security and data protection controls and maintain an information security architecture that includes data risk assessments, vendor risk assessments, contract reviews for both customers and vendors and a regular program of data privacy training for Ribbon employees. Certain Ribbon operations are certified to ISO 27001 Information Security Management Quality Standard and undergo annual self-assessments and external audits. In 2020, no major non-conformances were discovered in our ISO 27000 adherence.

Ribbon maintains an active data protection program which continuously monitors compliance to applicable data protection laws and the evolving data protection landscape. Our program focuses on compliance with the EU General Data Protection Regulation (GDPR) through robust data protection policies and practices. We apply these policies across the company, beyond the specific compliance needs in Europe, to create a common standard of privacy supporting Ribbon's compliance with applicable data protection laws around the globe. We pay particular attention in our relationships and interactions with our customers to ensure we have the right systems in place to assure their data privacy across countries. In our product development, we design our systems to enable troubleshooting without compromising privacy or facilitating unauthorized access to data.

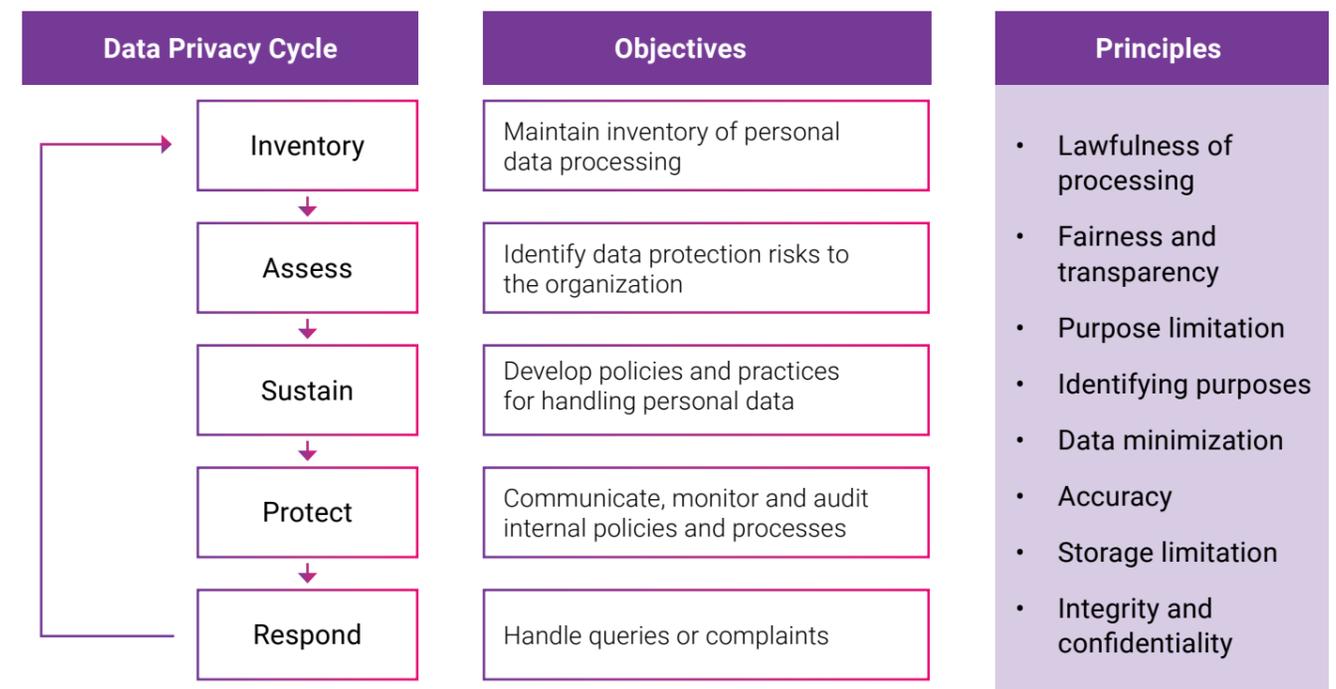
The following Key Performance Indicators are regularly reviewed by the Ribbon Data Privacy program manager and executive leadership in

order to measure program effectiveness:

- Privacy incidents
- Data protection assessments executed
- Data protection risks identified and addressed
- Training and awareness delivered
- Data Subject Rights (DSR) events

Overall executive direction of our data protection program is led by Cloud & Edge General Manager unit while Ribbon's Chief Legal Officer acts as the Data Protection Officer (DPO) for certain Ribbon entities. Both collaborate to ensure effective protection across the organization and regularly report status and progress to our executive leadership.

Ribbon is a corporate member of the International Association of Privacy Professionals (IAPP), the largest and most comprehensive global information privacy community and resource. Some members of Ribbon's internal Privacy Network maintain IAPP certifications including Certified Information Privacy Manager (CIPM) as well as Certified Information Privacy Professional for Europe (CIPP/E), US Private Sector (CIPP/US) and Canada (CIPP/C). Ribbon and several of its affiliated U.S. companies remain [self-certified](#) under the EU-US Privacy Shield and Swiss-US Privacy Shield programs. For more insight regarding Ribbon's approach to data protection and the personal data processed by Ribbon, please see our [Privacy Policy](#).

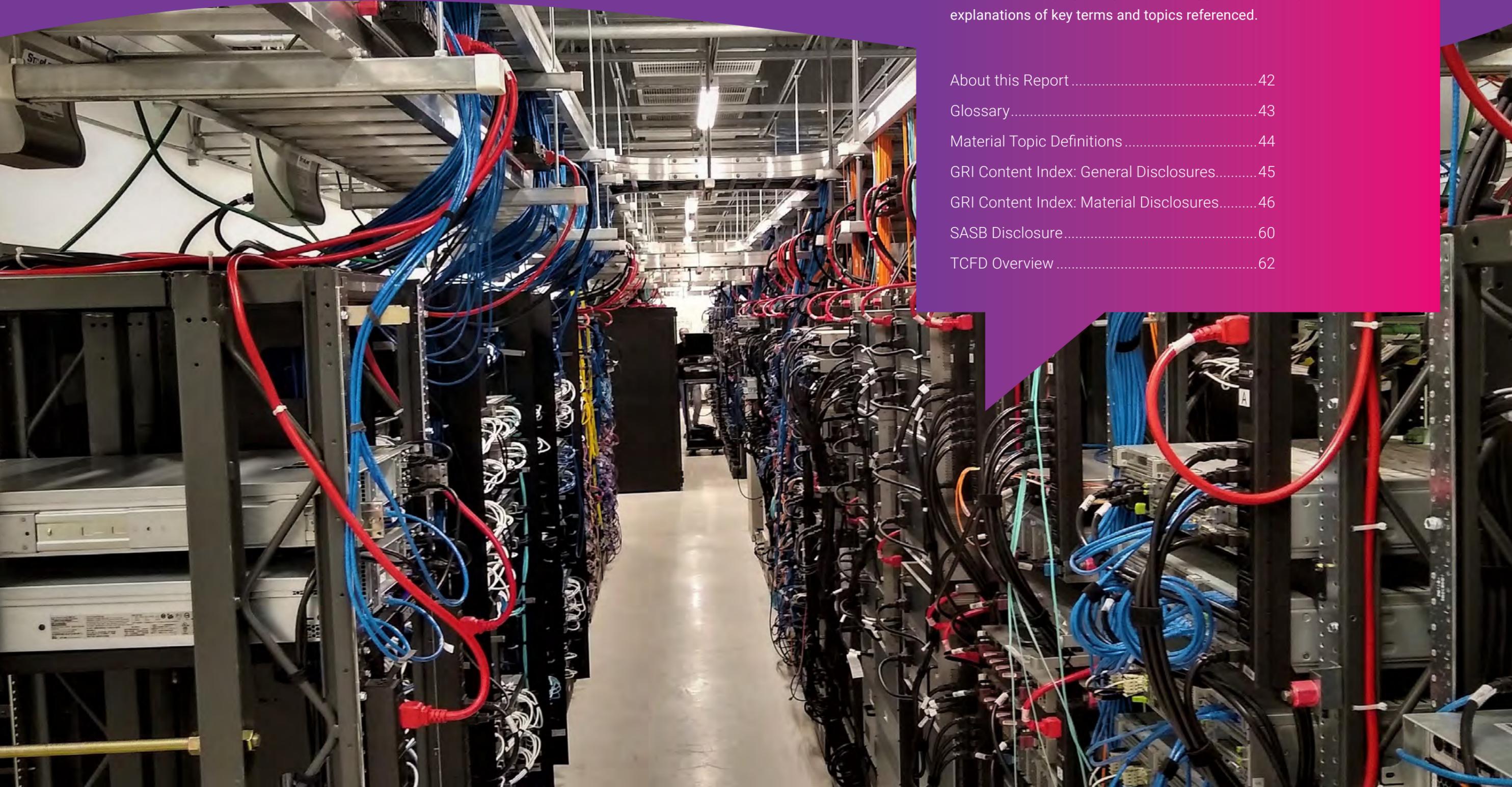


**Ribbon's data-protection cycle is supported by industry-leading privacy operations platforms and expert toolsets.**

# APPENDIX

This section contains our formal disclosures and data tables in line with the sustainability reporting standards applied in this Report as well as explanations of key terms and topics referenced.

About this Report .....	42
Glossary .....	43
Material Topic Definitions .....	44
GRI Content Index: General Disclosures.....	45
GRI Content Index: Material Disclosures.....	46
SASB Disclosure .....	60
TCFD Overview .....	62



# ABOUT THIS REPORT

This is Ribbon Communications' second global annual Sustainability Report, embracing the tradition of annual sustainability reporting established over the past eight years at ECI Telecom, following the merger of Ribbon with ECI in 2020. This Report presents our global operations as Ribbon Communications and shares ways in which Ribbon makes a positive contribution to people and society through its core business, and accounts for our environmental, social and governance (ESG) performance through 2020 and early 2021.

Data in this report relates to the 2020 calendar year and prior years and includes examples of practice and operational updates through 2020 and early 2021. Our last Sustainability Report was published in 2020. The scope of information in this report is all global business operations owned and operated by Ribbon, unless otherwise stated.

The selection of content for this report was informed by a robust stakeholder analysis and assessment of material topics conducted in early 2021. This report was prepared in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards, Core option. We also include an initial disclosure against the Sustainability Accounting standards Board (SASB) Technology Hardware Standard, and an overview of our climate change impacts in an initial disclosure using the Taskforce on climate-related financial Disclosures (TCFD). See these disclosures in the [Appendix](#) of this Report.

The data in this report was not verified by an independent third party. We believe our data monitoring and tracking is robust and is largely confirmed through internal audits and quality certifications by third parties.

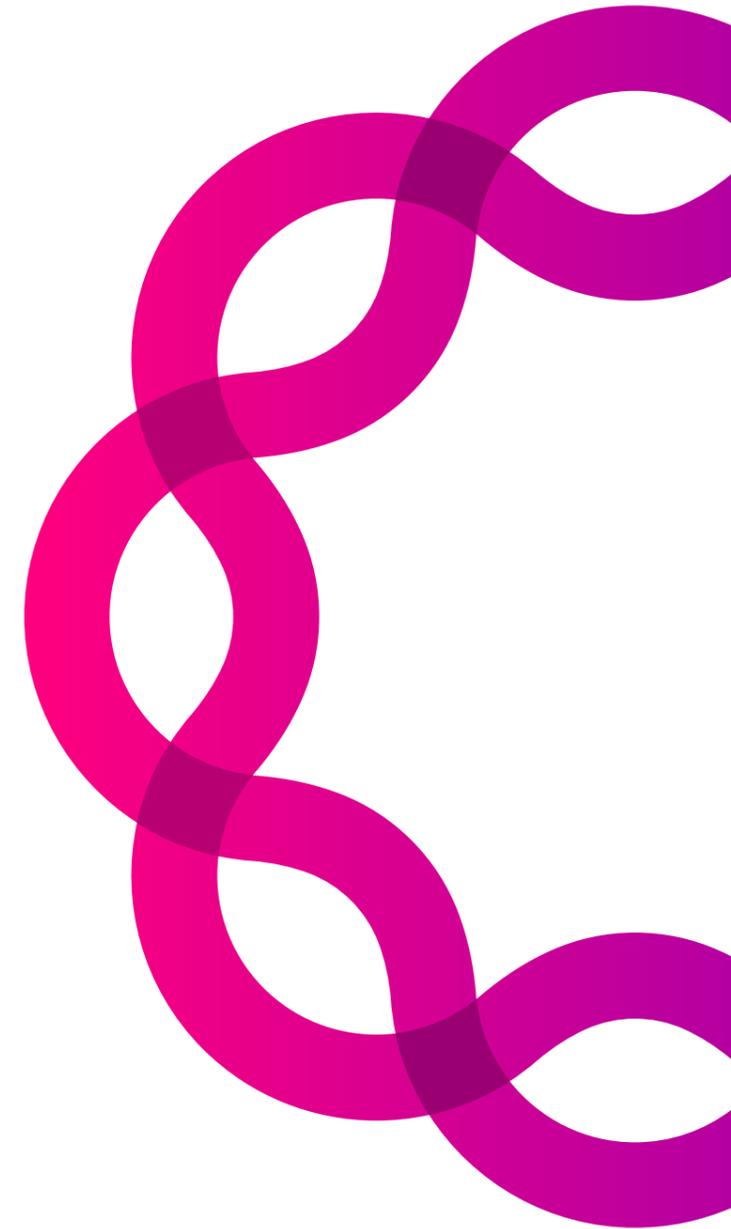
Data and information in this report may differ from information published in Ribbon's Annual Report, due to the different nature of disclosures and methodologies. In such cases, for regulatory disclosure requirements, the Annual Report should take precedence. In the event of any perceived discrepancy, or any other query or observation, as well as for any feedback or suggestions, we invite you to contact us.

Please write to:

**Brian Green**

**Global Sustainability**

[sustainability@rbbn.com](mailto:sustainability@rbbn.com)



# GLOSSARY

**5G:** This is the next generation wireless network technology that will transform how we use the internet. 5G will deliver unprecedented scale and speed, enabling entirely new ways of living, working, consuming entertainment and connecting with others, from telehealth to electric mobility, to smart cities, to remote working and much, much more. 5G requires a step-change in network architecture and infrastructure. Networks around the world are currently preparing for 5G and it is expected to roll out over the next 3-5 years.

**IP (Internet Protocol):** These are the rules for routing and addressing packets of data so that they can travel across networks and arrive at the correct destination. Data traversing the internet is divided into smaller pieces, called packets.

**IP Optical Networking:** An integrated, multi-layer system that combines IP routing and optical transport technology for optimum efficiency.

**Latency:** This is how the industry refers to the time it takes for a data packet to travel from one designated point to another. Very low latency – our objective – means that the time is shorter, so communications are faster.

**LTE (Long-Term Evolution):** In most countries, mobile data communications are carried on systems supporting the 4G LTE standard. These systems allow for the latest in high-speed data for mobile phones and other mobile devices for streaming voice calls, video, and data from social media and streaming services. Mobile phone industry standards often use Voice over LTE (VoLTE) for delivering voice as a data stream within the LTE data transmission.

**NEBS (Network Equipment-Building System):** NEBS is the most common set of safety, spatial and environmental design guidelines applied to telecommunications equipment in the United States.

**Network Functions Virtualization (NFV):** A procedure that increases and improves network function by managing networks, defined by the decoupling of network functions from proprietary hardware appliances and using these functions as virtual machines (VMs).

**Network slicing:** Network slicing allows a network operator to provide dedicated virtual networks with functionality specific to the service or customer over a common network infrastructure. Network slicing is a necessary option to support the numerous and varied services envisioned in 5G.

**NTr (Network Transformation):** This describes the process of conversion of current physical network hardware and infrastructure to virtualized networks and adoption of cloud services and functions to enable accelerated and enhanced connectivity around the world.

**Robocalling:** Robocalling has emerged over the past few years quite extensively and refers to telephone calls from an automated source that deliver a prerecorded message. Robocalls are typically delivered simultaneously to large numbers of people. While there are positive uses for robocalling, such as emergency calls or public service announcements, the downsides are troublesome: harassment, spoof calls, scams, threats and fraud, and these must be mitigated.

**RTC (Real-time Communications):** RTC includes phone calls, video conferencing, chat, text messaging, desktop sharing, and team collaboration.

**SBC (Session Border Controller):** A communications element that ensure RTC traffic is properly routed between network providers, ensuring differing protocols are understood so that calls can be delivered across different networks securely. An SBC secures and controls a SIP network by admitting (or not admitting) and then directing communications between two end devices on the network, such as a VoIP call between two phones or a video conference between multiple devices. SBCs are deployed at the network perimeter so they can control and secure real-time communication sessions for both enterprises and service providers.

**SIP (Session Initiated Protocol):** The primary protocol that establishes the connection between two endpoints and closes the connection when the call is finished.

**Software Defined Networking (SDN):** An architecture designed to make a network more flexible and easier to manage through flexible and adaptable software controls.

**STIR/SHAKEN Secure Telephone Identity Revisited (STIR) and Signature-based Handling of Asserted Information Using toKENs (SHAKEN):** References a framework of standards that improve call security by authenticating caller IDs.

**Streaming:** This refers to transmitting or receiving data (especially video and audio material) over a computer network as a steady, continuous flow, allowing playback to start while the rest of the data is still being received. Streaming is possible with high-speed connections and low latency.

**VoIP (Voice over Internet Protocol):** A system that allows users to make voice calls using the internet, rather than a telephone landline.

**x-haul:** Typically associated with the new 5G networks, x-haul is the ability to transport data from different points in the data transport network backwards or forwards to give maximum speed, flexibility and utilization of bandwidth.

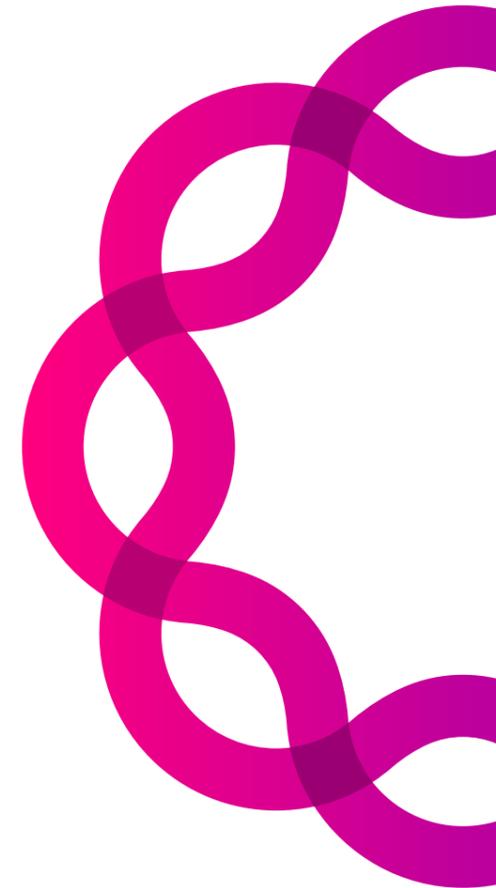
# MATERIAL TOPIC DEFINITIONS

Material topic	Definition
<b>Business ethics</b>	Ethical conduct across our all our business at all levels, in line with our corporate values and code of business conduct. Includes compliance with all applicable regulations including those related to taxes, competitive behavior, anti-corruption, anti-bribery, and conflict of interest.
<b>GHG emissions &amp; reductions</b>	Contributing to climate change mitigation through decarbonization of our own operations and through our value chain – including the indirect greenhouse gas emissions from third party manufacturers. Carbon mitigation strategies include energy efficiencies, renewable energy uptake and effective management of climate risk.
<b>Cybersecurity &amp; information security</b>	Instituting appropriate infrastructure, technology, control and checks to prevent harm to our business or breaches of corporate systems via all forms of cyber-attacks, malware, ransomware or any other illegal and unethical violations of our systems.
<b>Access to connectivity</b>	Expanding our reach to new markets, including emerging markets, and working collaboratively to help ensure access to internet and appropriate internet infrastructure with high network quality is available everywhere.
<b>Sustainable products</b>	Delivering ongoing improvements in the environmental sustainability of our products throughout the product lifecycle.
<b>Diversity, equity and inclusion</b>	Providing equitable opportunities for everyone to contribute and experience a sense of belonging at Ribbon. This includes proactive outreach to recruit diverse talent and establishing development programs that provide opportunity for all individuals to grow and succeed.
<b>Employee engagement</b>	Ensuring a values-based culture that inspires employees to contribute and enjoy a sense of meaning in their work. Delivering effective communication channels, programs to engage employees in the community and encouraging creativity, innovation and welcoming new ideas.
<b>Occupational health &amp; safety</b>	Compliance with applicable health and safety regulations across all or business and fostering a culture of safety in everything we do through effective safety management, training and communication.

Material topic	Definition
<b>Data privacy management</b>	Exercising appropriate, compliant and ethical control of third-party information, including collection, storage and deletion to ensure respect and confidentiality of individual and organizational data in line with all applicable laws and our standards of ethical conduct.
<b>Employee training and development</b>	Providing all employees, as appropriate for their role and potential, with aces to relevant training and professional development tools so that they can achieve personal and professional growth and contribute effectively to delivering Ribbon’s business objectives.
<b>Digital inclusion</b>	Collaborating to ensure an environment in which those who have access to the internet and digital literacy capabilities that assist individuals to navigate, understand and make the most of digital life to help them thrive in a modern world.
<b>Advanced technologies &amp; innovations</b>	Continuously innovating and delivering new technologies to improve accessibility, reliability, speed and cost-effectiveness of Ribbon solutions.
<b>Digital transformation</b>	Supporting global internet technology and communications developments, such as 5G, to promote effective rollout for the benefit of all. This includes related applications that are needed for smart cities, smart transportation, and a range of Internet of Things applications.
<b>Responsible supply chain management</b>	Ensuring a diverse network of suppliers to support our business and managing supplier networks effectively so that we are confident that all uphold our standards of ethical conduct, human rights and environmental stewardship.
<b>Business continuity &amp; recovery</b>	Maintaining an effective business continuity and recovery plan so that Ribbon can continue to support its customers even in times of unforeseen crises or disruptions. Our customers are dependent upon our continued support in order to serve their millions of end-users; our business continuity infrastructure is essential for their trust in our business.

# GRI CONTENT INDEX: GENERAL DISCLOSURES

GRI Standard (2016)	Disclosure	Page reference or response
102-1	Name of the organization	5
102-2	Activities, products, and services	5
102-3	Location of headquarters	Plano, Texas, U.S.
102-4	Location of operations	4
102-5	Ownership and legal form	5
102-6	Markets served	5
102-7	Scale of the organization	5
102-8	Information on employees	48
102-9	Supply chain	38
102-10	Significant changes	None.
102-11	Precautionary Principle	24
102-12	External initiatives	48
102-13	Membership of associations	48
102-14	Statement from senior manager	3
102-16	Values, principles, standards	5
102-18	Governance structure	37
102-40	List of stakeholder groups	49
102-41	Collective bargaining agreements	48
102-42	Identifying and selecting stakeholders	49
102-43	Stakeholder engagement	49
102-44	Key topics and concerns raised	49
102-45	Entities included	42
102-46	Report content and topic Boundaries	42
102-47	List of material topics	10
102-48	Restatements of information	50
102-49	Changes in reporting	None.
102-50	Reporting period	42
102-51	Date of most recent report	42
102-52	Reporting cycle	42
102-53	Contact point	42
102-54	Reporting in accordance with the GRI Standards	42
102-55	GRI content index	45
102-56	External assurance	42



# GRI CONTENT INDEX: MATERIAL DISCLOSURES

Material priority	GRI Standard	Management Approach*	GRI Topic-Specific Disclosures	Page	Omissions
<b>Business ethics</b>	GRI 205: Anti-Corruption 2016	38	205-3	Confirmed incidents of corruption and actions taken	38
	GRI 419: Socioeconomic Compliance 2016	38	409-1	Non-compliance with laws and regulations in the social and economic area	38
<b>GHG emissions &amp; reductions</b>	GRI 302: Energy 2016	23-26	302-1	Energy consumption within the organization	51
			302-3	Energy intensity	51
	GRI 305: Emissions 2016	23-26	305-1	Direct (Scope 1) GHG emissions	52
			305-2	Energy indirect (Scope 2) GHG emissions	52
			305-3	Other indirect (Scope 3) GHG emissions	52
		305-4	GHG emissions intensity	40	
<b>Cybersecurity &amp; information security</b>	Ribbon Indicator	40		ISO 27001 certification & NIST compliance	12-16
<b>Access to connectivity</b>	GRI 203: Indirect economic impacts 2016	12-16	203-2	Significant indirect economic impacts	21
<b>Sustainable products</b>	GRI 302: Energy 2016	19-21	302-5	Reductions in energy requirements of products and services	59
<b>Diversity, equity and inclusion</b>	GRI 405: Diversity and Equal Opportunity 2016	33	405-1	Diversity of governance bodies and employees	56
<b>Employee engagement</b>	GRI 401: Employment 2016	30	401-1	New employee hires and turnover	56
<b>Occupational health &amp; safety</b>	GRI 403: Occupational Health and Safety 2018	34	403-1	Occupational health and safety management system	56
			403-2	Hazard identification, risk assessment, and incident investigation	56
			403-3	Occupational health services	57
			403-4	Worker participation, consultation, and communication on occupational health and safety	57
			403-5	Worker training on occupational health and safety	57
			403-6	Promotion of worker health	57
			403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	57
			403-8	Workers covered by OHS management system	57
			403-9	Work-related injuries	57
			403-10	Work-related ill health	57
<b>Data privacy management</b>	GRI 418: Data privacy 2016	47	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	None.

\* Refers to GRI Standard 103 (2016) including 103-1, 103-2, 103-3

Material priority	GRI Standard	Management Approach*	GRI Topic-Specific Disclosures	Page	Omissions
<b>Employee training and development</b>	GRI 404: Training and Education 2016	31	404-1	Average hours of training per employee	58
			404-2	Programs for upgrading employee skills and transition assistance programs	31-32
			404-3	Employees receiving performance reviews	58
<b>Digital inclusion</b>	GRI 203: Indirect economic impacts 2016	12-22	203-2	Significant indirect economic impacts	15-16
<b>Advanced technologies &amp; innovations</b>	GRI 203: Indirect economic impacts 2016	19	203-2	Significant indirect economic impacts	19-21
<b>Responsible supply chain management</b>	GRI 414: Supplier Social Assessment 2016	38	414-1	New suppliers that were screened using social criteria	100% of new Tier 1 strategic global suppliers
<b>Business continuity &amp; recovery</b>	Ribbon Indicator	40		ISO certification ISO 22301:2019	40

Additional disclosures	GRI Standard	Management Approach*	GRI Topic-Specific Disclosures	Page	Omissions
<b>Water</b>	GRI 303: Water 2018	26-27	303-1	Interactions with water as a shared resource	53
			303-2	Management of water discharge-related impacts	53
			303-3	Water withdrawal	53
<b>Waste</b>	GRI 306: Waste 2020	26-27	306-1	Waste generation and significant waste-related impacts	54
			306-2	Management of significant waste-related impacts	54
			306-3	Waste generated	55
			306-4	Waste diverted from disposal	55
			306-5	Waste directed to disposal	55
<b>Community</b>	GRI 413: Local Communities 2016	35	413-1	Operations with local community engagement	100% of our global operations are included in our annual Global Day of Service

\* Refers to GRI Standard 103 (2016) including 103-1, 103-2, 103-3

## 102-8: Information on employees

Employees by region, gender and contract	2018			2019			2020		
	Men	Women	All	Men	Women	All	Men	Women	All
North America	1,081	247	1,328	1,001	230	1,231	926	221	1,147
EMEA	854	241	1,095	895	278	1,173	840	254	1,094
ASIA	1,047	267	1,314	1,119	310	1,429	1,104	313	1,417
LATAM	114	13	127	118	13	131	107	16	123
<b>All employees</b>	<b>3,096</b>	<b>768</b>	<b>3,864</b>	<b>3,133</b>	<b>831</b>	<b>3,964</b>	<b>2,977</b>	<b>804</b>	<b>3,781</b>
Percentage full time contracts	99%	94%	98%	99%	93%	98%	99%	94%	99%
Percentage permanent contracts	80%	20%	99%	79%	21%	99%	100%	98%	99%

## 102-12: External initiatives

Ribbon engages with EcoVadis for supply chain assessment.

## 102-13: Membership of associations

Around the world, Ribbon plays a role in several associations including the Telecommunications Industry Association (TIA). See our website for a list of industry organizations that Ribbon participates in: <https://ribboncommunications.com/partners/industry-organizations>.

## 102-41: Collective agreements

Employees covered by collective agreements	2018	2019	2020
North America	1	1	1
EMEA	56	717	643
ASIA	0	0	0
LATAM	12	10	12
<b>All employees</b>	<b>69</b>	<b>728</b>	<b>656</b>
Percentage of total employees	2%	18%	17%

## 102-40: List of stakeholder groups

## 102-42: Identifying and selecting stakeholders

## 102-43: Stakeholder engagement

## 102-44: Key topics and concerns raised

In 2020, we completed a full mapping of our stakeholders, and defined 10 stakeholder clusters (in alphabetical order):

- **Capital Markets:** including banks, financiers, investors and investment analysts, and rankers and raters of ESG performance
- **Communities:** including local communities, resident associations, and local interest groups
- **Customers:** including all different customer categories and sales channel partners
- **Employees:** including current and potential employees, employee families and retirees, and employee representatives
- **Financers:** including banks, insurance agencies and financial service providers
- **Industry:** including peers, industry associations, industry opinion leaders and standard setters
- **Influencers:** including sustainability standard setters, global or national sustainability organizations, corporate responsibility opinion leaders, UN and international institutions, media and social media
- **Regulators:** including national government and local municipalities and licensing authorities
- **Society and Planet:** including Non-Governmental Organizations, non-profits, humanitarian, human rights and environmental organizations and academia
- **Suppliers:** including suppliers, vendors, contract manufacturers and relevant supplier associations

We analyzed these stakeholder groups based on three considerations:

- **Impact:** the degree Ribbon's business and activities impact their lives
- **Influence:** the degree to which they influence Ribbon's business success
- **Intensity:** the frequency and depth of interaction with each group

The output of this analysis was a categorization of stakeholder groups according to one of three criteria:

- **Collaborate:** Very high impact, influence and intensity – these are stakeholders we aspire to engage meaningfully, collaborating closely on a variety of topics
- **Consult:** High impact, high influence, medium intensity – these are stakeholders we aspire to listen closely to their needs and expectations to before making important decisions in our business and consult with them on a range of issues and
- **Communicate:** Medium impact, medium influence and low intensity – these are stakeholder groups we aspire to always be on our radar, we wish to inform them transparently of our progress and performance and engage more deeply on an as needed basis

### Ribbon's Stakeholders by Category

COLLABORATE	CONSULT	COMMUNICATE
Customers	Capital Markets	Financers
Employees	Regulators	Communities
Suppliers	Industry	Influencers
Society and Planet		

## Note to energy and emissions data compilation

- Energy and emissions data covers all Ribbons sites operational in 2020 with a population of more than 25 employees approximately. Sites with fewer employees are smaller sales offices and we do not closely track consumption or usage. In general, this represents approximately 80% of our employees. In 2020, we added six locations, increasing resource usage of approximately 30% in energy and other environmental values to our overall performance in absolute terms. Going forward, we will track our reporting to a 2020 baseline and reflect changes due to differences in site composition. Ribbon's operational sites change from year to year as customer demand changes and we relocate operations to deliver efficiencies.
- We apply an operational control basis.
- In 2020, we reviewed our environmental data in detail, following the appearance of some discrepancies in data reporting for prior years. We therefore analyzed all environmental data and rechecked data sources back to 2017 and revised our data accordingly. Therefore, data for 2017-2019 are restated versus prior reports and disclosures. We have now established a more robust data collection process going forward.
- Energy conversion factors apply UK Government GHG Conversion Factors for Company Reporting for each reporting year.
- Emissions conversion factors use International Energy Agency (IEA) factors for electricity generation by country by year with trade adjustments applied. We report CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> factors supplied by IEA.
- Market based emissions are applied in one location only (Maidenhead, UK) where we have Certificates of Origin from our site landlord. All other factors are location based.
- Scope 3 emissions cover business travel (flights) and employee commuting at this time. Flights emissions are reported to us by our global travel vendors. Employee commuting is based on kilometer/passenger calculations at each site and converted using IEA private vehicle emission factors.
- MT refers to metric tons.
- YOY means year-on-year, a comparison with prior year performance.

## GRI 302: Energy 2016

### 302-1: Energy consumption within the organization

Type	Unit	2017	2018	2019	2020	YOY
Natural gas	GJ	11,832	16,724	19,826	17,348	-13%
Diesel	GJ	1,733	2,682	1,744	935	-46%
Gasoline	GJ	19,580	39,566	14,359	23,445	63%
<b>Total Scope 1 energy (gases/fuels)</b>	<b>GJ</b>	<b>33,145</b>	<b>58,972</b>	<b>35,930</b>	<b>41,728</b>	<b>16%</b>
Purchased electricity	GJ	150,470	179,426	184,223	182,428	-1%
Renewable electricity purchased	GJ	2,585	2,574	3,046	3,725	22%
<b>Total Scope 2 energy (electricity)</b>	<b>GJ</b>	<b>153,054</b>	<b>182,000</b>	<b>187,268</b>	<b>186,152</b>	<b>-0.60%</b>
Purchased heating	GJ	0	602	0	602	
Purchased cooling	GJ	0	7,023	0	4,044	
<b>Total Scope 2 energy</b>	<b>GJ</b>	<b>153,054</b>	<b>189,626</b>	<b>187,268</b>	<b>190,798</b>	<b>2%</b>
<b>Total energy consumption</b>	<b>GJ</b>	<b>186,199</b>	<b>248,598</b>	<b>223,198</b>	<b>232,526</b>	<b>4%</b>

### 302-3: Energy intensity

Type	Unit	2017	2018	2019	2020	YOY
Scope 1 (fuels and gases)	GJ/employee	12.63	21.14	12.81	14.35	12%
Scope 2 (electricity)	GJ/employee	58.31	65.23	66.79	64.01	-4%
<b>Energy intensity/employee</b>	<b>GJ/employee</b>	<b>70.93</b>	<b>89.10</b>	<b>79.60</b>	<b>79.96</b>	<b>0%</b>
Total Scope 1 energy (gases/fuels)	GJ/ft <sup>2</sup>	0.08	0.10	0.06	0.06	5%
Total Scope 2 energy (electricity)	GJ/ft <sup>3</sup>	0.35	0.33	0.31	0.28	-8%
<b>Energy intensity/ft<sup>2</sup></b>	<b>GJ/ft<sup>2</sup></b>	<b>0.43</b>	<b>0.43</b>	<b>0.37</b>	<b>0.34</b>	<b>-6%</b>

## GRI 305: Emissions 2016

### 305-1: Direct (Scope 1) GHG emissions

Type	Unit	2017	2018	2019	2020	YOY
Natural gas	MT CO <sub>2</sub> e	695	959	1,127	983	-13%
Diesel	MT CO <sub>2</sub> e	127	198	129	69	-46%
Gasoline	MT CO <sub>2</sub> e	1,364	2,762	1,007	1,643	63%
<b>Total Scope 1 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>2,186</b>	<b>3,919</b>	<b>2,263</b>	<b>2,695</b>	<b>19%</b>

### 305-2: Energy indirect (Scope 2) GHG emissions

Type	Unit	2017	2018	2019	2020	YOY
Purchased electricity (market based)	MT CO <sub>2</sub> e	18,786	21,641	21,218	20,422	-3.7%
Purchased heating	MT CO <sub>2</sub> e	0	23	0	101	
Purchased cooling	MT CO <sub>2</sub> e	0	268	0	916	
<b>Total Scope 2 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>18,786</b>	<b>21,932</b>	<b>21,218</b>	<b>21,439</b>	<b>1%</b>

#### Scope 2 GHG emissions by market or location

Market based	MT CO <sub>2</sub> e	20,972	25,851	23,481	24,135	2.8%
Location based	MT CO <sub>2</sub> e	21,174	22,109	23,677	24,319	2.7%

Type	Unit	2017	2018	2019	2020	YOY
<b>Total Scope 1 &amp; 2 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>20,972</b>	<b>25,851</b>	<b>23,481</b>	<b>24,135</b>	<b>3%</b>

### 305-3: Other indirect (Scope 3) GHG emissions

Type	Unit	2017	2018	2019	2020	YOY
Business travel	MT CO <sub>2</sub> e	3,676	3,343	3,416	632	-82%
Employee commuting	MT CO <sub>2</sub> e				1,198	
<b>Total Scope 3 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>3,676</b>	<b>3,343</b>	<b>3,416</b>	<b>1,830</b>	<b>-46%</b>
Scope 3 GHG emissions intensity	MT CO <sub>2</sub> e /employee	0.89	0.87	0.86	0.48	-44%

### 305-4: GHG emissions intensity

Type	Unit	2017	2018	2019	2020	YOY
Scope 1 GHG emissions intensity	MT CO <sub>2</sub> e /employee	0.83	1.40	0.81	0.93	15%
Scope 2 GHG emissions intensity	MT CO <sub>2</sub> e /employee	7.16	7.86	7.57	7.37	-3%
<b>Scope 1 &amp; 2 / employee</b>	<b>MT CO<sub>2</sub>e /employee</b>	<b>7.99</b>	<b>9.27</b>	<b>8.37</b>	<b>8.30</b>	<b>-1%</b>
Scope 1 GHG emissions intensity	MT CO <sub>2</sub> e /ft <sup>2</sup>	0.01	0.01	0.00	0.00	8%
Scope 2 GHG emissions intensity	MT CO <sub>2</sub> e /ft <sup>2</sup>	0.04	0.04	0.03	0.03	-9%
<b>Scope 1 &amp; 2 / ft<sup>2</sup></b>	<b>MT CO<sub>2</sub>e /ft<sup>2</sup></b>	<b>0.04</b>	<b>0.04</b>	<b>0.03</b>	<b>0.03</b>	<b>-9%</b>

## Scope 1 & 2 & 3 emissions summary

GHG emissions	Unit	2017	2018	2019	2020	YOY
Scope 1 & 2 & 3 GHG emissions	MT CO <sub>2</sub> e	24,648	29,193	26,896	25,965	-3%
Scope 1 & 2 & 3 GHG emissions intensity / employee	MT CO <sub>2</sub> e /employee	8.879	10.131	9.236	8.783	-5%
Scope 1 & 2 & 3 GHG emissions intensity / ft <sup>2</sup>	MT CO <sub>2</sub> e /ft <sup>2</sup>	0.054	0.050	0.043	0.038	-11%

## GRI 303: Water 2018

### 303-1: Interactions with water as a shared resource

Ribbon is not a water intensive business. We use small volumes of water for hygiene, cooling and irrigation purposes. We aim to minimize our consumption wherever possible with water-saving devices across our sites.

### 303-2: Management of water discharge-related impacts

Our water discharge is non-toxic and is treated through municipal water grids.

### 303-3: Water withdrawal

GHG emissions	Unit	2017	2018	2019	2020	YOY
Municipal water	m <sup>3</sup>	25,976	27,446	31,437	21,675	-31%
<b>Total water withdrawal in megaliters</b>	<b>megaliters</b>	<b>25.98</b>	<b>27.45</b>	<b>31.44</b>	<b>21.68</b>	<b>-31%</b>
Water intensity / employee	m <sup>3</sup> /employee	16.14	15.48	18.49	11.50	-38%
Water intensity / ft <sup>2</sup>	m <sup>3</sup> /ft <sup>2</sup>	0.09	0.06	0.07	0.04	-41%

#### Note:

Several several of our sites are leased and water is not effectively metered. Therefore in 2020, sites representing approximately 70% of our overall consumption are included. We are developing improved reporting processes for future years.

## GRI 306: Waste 2020

### 306-1: Waste generation and significant waste-related impacts

### 306-2: Management of significant waste-related impacts

Our overall waste generation is modest, being mainly office related waste such as paper and organic waste. We generate some electronic and/or chemical waste from our R&D and laboratory facilities. We aim to minimize waste where possible, and segregate into waste streams to enable reuse, recycling or safe disposal. As many of our facilities are leased and managed, we aim to work with facility owners to ensure appropriate waste management and accounting processes for the small levels of waste we generate.

### 306-3: Waste generated

Waste Type	Unit	2018	2019	2020
<b>NON-HAZARDOUS</b>				
Plastic	MT	0	0	1
Board, paper	MT	0	0	16
Chemical	MT	0	0	103
Organic	MT	0	0	109
Dry Mixed Recycling (paper/cans/plastics)	MT	152	132	84
<b>HAZARDOUS</b>				
Plastic	MT	0	0	0
Board, paper (paper recycling)	MT	25	42	11
Chemical	MT	4	0	6
Organic	MT	0	0	4
Other	MT	0	2	8
<b>TOTAL WASTE by type</b>				
Plastic	MT	0	0	1
Board, paper	MT	25	42	27
Chemical	MT	4	0	109
Organic	MT	0	0	113
Dry Mixed Recycling (paper/cans/plastics)	MT	152	132	84
Other	MT	0	2	8
<b>TOTAL</b>	<b>MT</b>	<b>181</b>	<b>176</b>	<b>341</b>

### 306-4: Waste diverted from disposal

### 306-5: Waste directed to disposal

Waste Type	Unit	2018	2019	2020
<b>NON-HAZARDOUS diverted from disposal</b>				
Preparation for reuse (includes composting)	MT	0	0	0
Recycling (including energy recovery)	MT	152	46	164
Other recovery operations	MT	0	0	40
<b>NON-HAZARDOUS directed to disposal</b>				
Incineration (with energy recovery)	MT	0	0	0
Incineration (without energy recovery)	MT	0	0	0
Landfill	MT	0	144	108
Other disposal operations.	MT	0	0	0
<b>Total non-hazardous waste diverted</b>	<b>MT</b>	<b>152</b>	<b>46</b>	<b>205</b>
<b>Total non-hazardous waste disposed</b>	<b>MT</b>	<b>0</b>	<b>144</b>	<b>108</b>
<b>Total non-hazardous waste</b>	<b>MT</b>	<b>152</b>	<b>189</b>	<b>313</b>
<b>HAZARDOUS diverted from disposal</b>				
Preparation for reuse (includes composting)	MT	0	0	0
Recycling (including energy recovery)	MT	0	0	20
Other recovery operations (IT waste)/ [ WEEE recycling]	MT	4	2	8
<b>HAZARDOUS directed to disposal</b>				
Incineration (with energy recovery)	MT	0	0	0
Incineration (without energy recovery)	MT	0	0	0
Landfill	MT	0	0	0
Other disposal operations.	MT	0	0	0
<b>Total hazardous waste diverted</b>	<b>MT</b>	<b>4</b>	<b>2</b>	<b>28</b>
<b>Total hazardous waste disposed</b>	<b>MT</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total hazardous waste</b>	<b>MT</b>	<b>4</b>	<b>2</b>	<b>28</b>
<b>Total non-hazardous waste</b>	<b>MT</b>	<b>152</b>	<b>189</b>	<b>313</b>
<b>Total hazardous waste</b>	<b>MT</b>	<b>4</b>	<b>2</b>	<b>28</b>
<b>Total waste</b>	<b>MT</b>	<b>156</b>	<b>191</b>	<b>341</b>
<b>Total waste diverted</b>	<b>MT</b>	<b>156</b>	<b>47</b>	<b>233</b>
<b>Total waste disposed</b>	<b>MT</b>	<b>0</b>	<b>144</b>	<b>108</b>
<b>Total waste diverted</b>	<b>%</b>	<b>100%</b>	<b>25%</b>	<b>68%</b>
<b>Total waste disposed</b>	<b>%</b>	<b>0%</b>	<b>75%</b>	<b>32%</b>

### 401-1: New employee hires and turnover

	Men < 30	Men 30-50	Men > 50	Women < 30	Women 30-50	Women > 50	All Men	All Women	Total	
<b>2020: New hires</b>	North America	5	9	18	1	3	4	32	8	40
	EMEA	9	27	13	0	4	0	49	4	53
	ASIA	47	26	5	28	7	0	78	35	113
	LATAM	1	3	1	1	2	0	5	3	8
	<b>Total</b>	<b>62</b>	<b>65</b>	<b>37</b>	<b>30</b>	<b>16</b>	<b>4</b>	<b>164</b>	<b>50</b>	<b>214</b>
<b>2020: New hire rates</b>	North America	0.13%	0.24%	0.48%	0.03%	0.08%	0.11%	0.85%	0.21%	1.06%
	EMEA	0.24%	0.71%	0.34%	0.00%	0.11%	0.00%	1.30%	0.11%	1.40%
	ASIA	1.24%	0.69%	0.13%	0.74%	0.19%	0.00%	2.06%	0.93%	2.99%
	LATAM	0.03%	0.08%	0.03%	0.03%	0.05%	0.00%	0.13%	0.08%	0.21%
	<b>Total</b>	<b>1.64%</b>	<b>1.72%</b>	<b>0.98%</b>	<b>0.79%</b>	<b>0.42%</b>	<b>0.11%</b>	<b>4.34%</b>	<b>1.32%</b>	<b>5.66%</b>

	Men < 30	Men 30-50	Men > 50	Women < 30	Women 30-50	Women > 50	All Men	All Women	Total	
<b>2020: Leavers</b>	North America	14	40	51	0	8	8	105	16	121
	EMEA	13	43	33	8	13	5	89	26	115
	ASIA	35	43	4	16	8	5	82	29	111
	LATAM	2	5	2	0	0	0	9	0	9
	<b>Total</b>	<b>64</b>	<b>131</b>	<b>90</b>	<b>24</b>	<b>29</b>	<b>18</b>	<b>285</b>	<b>71</b>	<b>356</b>
<b>2020: Turnover rates</b>	North America	0.37%	1.06%	1.35%	0.00%	0.21%	0.21%	2.78%	0.42%	3.20%
	EMEA	0.34%	1.14%	0.87%	0.21%	0.34%	0.13%	2.35%	0.69%	3.04%
	ASIA	0.93%	1.14%	0.11%	0.42%	0.21%	0.13%	2.17%	0.77%	2.94%
	LATAM	0.05%	0.13%	0.05%	0.00%	0.00%	0.00%	0.24%	0.00%	0.24%
	<b>Total</b>	<b>1.69%</b>	<b>3.46%</b>	<b>2.38%</b>	<b>0.63%</b>	<b>0.77%</b>	<b>0.48%</b>	<b>7.54%</b>	<b>1.88%</b>	<b>9.42%</b>

### 403-1: Occupational health and safety (OHS) management system

We maintain comprehensive set of OHS standards that are applied throughout Ribbon's operations.

### 403-2: Hazard identification, risk assessment, and incident investigation

Work related hazards are identified through workplace inspections and safety observations as defined in our OHS Management System.

### 403-3: Occupational health services

Ribbon does not provide occupational health services onsite.

### 403-4: Worker participation, consultation, and communication on occupational health and safety

Safety Committees operate at all Ribbon sites and include representation from management and employees.

### 403-5: Worker training on occupational health and safety

We provide OHS training online or in classroom format, where relevant, for all new employees and annual safety refreshers for all employees. For employees in specific roles, such as in our laboratories, targeted safety training is delivered, covering specific risks associated with identified roles.

### 403-6: Promotion of worker health

Ribbon promotes health and wellness and aims to raise awareness among employees through our annual Wellness Month and other activities throughout the year. We provide health and wellness related benefits in different countries in line with local market norms, such as medical insurance, dental insurance and more.

### 403-7: Prevention and mitigation of occupational health and safety impacts directly linked by business relationships

Our [Supplier Code of Conduct](#) requires our suppliers to ensure safe working conditions and a healthy work environment for their workers and uphold a detailed list of OHS standards. We audit our suppliers regarding conformance to our Code.

### 403-8: Workers covered by an occupational health and safety management system

All Ribbon employees are covered by our OHS management system.

### 403-9: Work related injuries

Injury rate by year	2018	2019	2020
Employees and contractors	0.739	0.234	0.177

Work related injuries	2020		
	Direct employees	Other workers	Total workforce
Hours worked	6,058,000	738,000	6,796,000

Fatalities	Number	0	0	0
	Rate	0	0	0
Work related injuries	Number	4	2	6
	Rate	0.132	0.542	0.177
Recordable work-related injuries	Number	0	0	0
	Rate			
High-consequence work-related injuries	Number	0	0	0
	Rate	0	0	0

#### Notes:

- Injury rates are calculated per 200,000 hours for actual hours worked, except in Israel where an average of 2,000 per person year is used.
- Work related injuries includes all injuries including those requiring first aid but not necessarily resulting in lost workdays.
- In 2020, many employees worked from home. Safety data includes employees working from home.

### 403-10: Work related ill-health

Ribbon has not identified any significant cases of work-related ill health in 2020.

### 404-1: Average hours of training per employee

Training hours	2018			2019			2020
	Men	Women	All	Men	Women	All	All
Managers	17,275	3,734	<b>21,009</b>	8,131	2,962	<b>11,093</b>	8,080
Non-managers	32,167	6,927	<b>39,093</b>	40,939	14,563	<b>55,502</b>	37,298
<b>All employees</b>	49,442	10,661	<b>60,103</b>	49,070	17,525	<b>66,595</b>	<b>45,378</b>
<b>Average training hours per employee per year</b>	10.01	9.05	<b>9.83</b>	9.97	13.93	<b>10.78</b>	<b>12.00</b>

#### Notes:

- In 2020, we transitioned all our training records and monitoring to our new HRIS. Some data is estimated and some data for 2020 are incomplete. Therefore, while we know that all planned training was not conducted in 2020 due to COVID-19 restrictions, we believe training data are understated in 2020. We expect data for 2021 to be accurate for full year reporting via the new HRIS.
- Gender split in 2020 is not available due to the HRIS transition. We expect to report training breakdown by gender in 2021.

### 404-3: Employees receiving performance reviews

Details of performance reviews	2018		2019		2020	
	Men	Women	Men	Women	Men	Women
Managers	96%	98%	92%	100%	100%	100%
Non-managers	74%	95%	100%	99%	99%	98%
<b>Total by gender</b>	<b>94%</b>	<b>99%</b>	<b>98%</b>	<b>99%</b>	<b>99%</b>	<b>99%</b>
<b>Total</b>	<b>94%</b>		<b>99%</b>		<b>99.9%</b>	

#### 405-1: Diversity of governance bodies and employees

	2020		
Employees by age group (number)	< 30	30 - 50	> 50
Managers	4	298	367
Non-managers	737	880	1,495
<b>Total employees</b>	<b>741</b>	<b>1,178</b>	<b>1,862</b>

	2020		
Employees by age group (%)	< 30	30 - 50	> 50
Managers	1%	45%	55%
Non-managers	24%	28%	48%
<b>Total employees</b>	<b>20%</b>	<b>31%</b>	<b>49%</b>

	2018		2019		2020	
Women at Ribbon	Number	%	Number	%	Number	%
Executives	2	10%	2	12%	2	20%
Managers	95	16%	92	15%	110	16%
Non-managers	671	21%	737	22%	694	22%
<b>All women</b>	<b>768</b>	<b>20%</b>	<b>831</b>	<b>21%</b>	<b>806</b>	<b>21%</b>

#### Board of Directors:

Two Board members are women (22%) and two (22%) are underrepresented minorities. Total Board diversity: 44%

# SASB DISCLOSURE

Topic	Code	Accounting Metric	Response
<b>Product Security</b>	<b>TC-HW-230a.1</b>	Description of approach to identifying and addressing data security risks in products	See response on page 61.
<b>Employee Diversity &amp; Inclusion</b>	<b>TC-HW-330a.1</b>	Percentage of gender and racial/ethnic group representation for management	16% women at executive and management level.
		Percentage of gender and racial / ethnic group representation for technical staff	9% racial / ethnic group representation for technical staff.
		Percentage of gender and racial/ethnic group representation for all other employees	22% of all non-management employees at Ribbon are women.
<b>Product Lifecycle Management</b>	<b>TC-HW-410a.1</b>	Percentage of products by revenue that contain IEC 62474 declarable substances	Zero
	<b>TC-HW-410a.2</b>	Percentage of eligible products, by revenue, meeting the requirements for EPEAT registration or equivalent	Our products are not registered with EPEAT.
	<b>TC-HW-410a.3</b>	Percentage of eligible products, by revenue, meeting ENERGY STAR® criteria	We do not currently apply ENERGY STAR® criteria for our products.
	<b>TC-HW-410a.4</b>	Weight of end-of-life products and e-waste recovered (metric tons)	Not available
Percentage of end-of-life products and e-waste recovered/recycled		Not available	
<b>Supply Chain Management</b>	<b>TC-HW-430a.1</b>	Percentage of Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent - all facilities	Ribbon supplier facilities are audited using Ribbon's internal standards, guided by ISO. 100% of Tier 1 facilities were audited in 2020.
		Percentage of Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent - high-risk facilities	Ribbon supplier facilities are audited using Ribbon's internal standards, guided by ISO. 100% of Tier 1 facilities were audited in 2020.
	<b>TC-HW-430a.2</b>	Tier 1 suppliers' non-conformance rate with the RBA Validated Audit Process (VAP) or equivalent	Zero major non-conformances were found in audited suppliers in 2020 against Ribbon's internal standards.
	Tier 1 suppliers associated corrective action rate for priority non-conformances		
	Tier 1 suppliers associated corrective action rate for other non-conformances		
<b>Materials Sourcing</b>	<b>TC-HW-440a.1</b>	Description of the management of risks associated with the use of critical materials	Ribbon does not have a critical material risk, given our minimal use of such materials. In any event, we do not stockpile materials and maintain mitigations plans for all materials that can be substituted if necessary.

\* Racial / ethnicity data is based on voluntary self-identification and many employees choose not to self-identify. We believe our data includes approximately 44% of the workforce. Rates have been calculated against the total workforce and are therefore likely to be understated.

Code	Activity Metric	Response
TC-HW-000.A	Number of units produced by product category	More than 60% of revenues come from services. The remaining sales are hardware in different forms, but specific numbers of units shipped is not currently tracked globally.
TC-HW-000.B	Area of manufacturing facilities	All Ribbon manufacturing is outsourced. Ribbon has no owned or operated manufacturing facilities.
TC-HW-000.C	Percentage of production from owned facilities	0%

## Product Security: TC-HW-230a.1

### Description of approach to identifying and addressing data security risks in products

- Product security considerations, risk assessments, hazard identification and protection measures are built into Ribbon processes at every state of our product lifecycle through: concept, planning design validation, maintenance and end-of-life.
- Ribbon R&D supports an active program to ensure that our products are as secure as possible, based on working with leading frameworks and standards over several years. We incorporate learnings from:
  - The Open Web Application Security Project ® (OWASP)
  - The CERT Coordination Center (CERT/CC)
  - Most Dangerous Software Errors (CWE/SANS)
  - Center for Internet Security(CIS)
- Our product security program also manages a set of processes and policies that support maintaining highest possible levels of security such as: Vulnerability Resolution Policy, Incident Response Process, and other processes.
- Ribbon's product R&D organization utilizes a variety of tools to help manage and maintain product security. Tests are also run with an AddressSanitizer (ASan) instrumented load.
- Ribbon engineers receive mandatory annual security training that combines commercial security training along with proprietary training content.

# TCFD OVERVIEW

G20 Finance Ministers and Central Bank Governors asked the Financial Stability Board (FSB) to review how the financial sector can take account of climate-related issues. In 2015, the FSB established the Task Force on Climate-related Financial Disclosures (TCFD) to develop recommendations for more effective climate-related disclosures that: could promote more informed investment, credit, and insurance underwriting decisions, and in turn, would enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks.

TCFD is a voluntary, consistent climate-related financial risk disclosures to provide information to investors, lenders, insurers and other stakeholders.

We are working to deliver a comprehensive TCFD report in the future, after further science-based analysis of our operations and additional climate change risks. In the meantime, we are pleased to provide an overview for the benefit of our stakeholders.

## 1. Governance

### 1.1 Board oversight

Ribbon's Board of Directors reviews and guides Ribbon's sustainability strategy and climate change goals and aspirations. Our overall sustainability strategy is led by Ribbon's Executive Vice President and Chief Legal Officer., who updates the President and Chief Executive Officer and Board of Directors regularly through the year.

### 1.2 Management's role

Our Executive Team takes responsibility for Ribbon's climate change strategy, under the leadership of Executive Vice President and Chief Legal Officer. In 2020, our Executive Team authorized the investment in a multi-year sustainability strategy, following a robust materiality assessment and selection of the most important sustainability topics that are relevant for Ribbon and Ribbon's stakeholders. The sustainability strategy comprises four pillars, one of which is Low Carbon Economy, addressing our aspiration to contribute to decarbonizing the global economy through innovative technologies and resource efficiency. As an initial target, we commit to reducing our direct greenhouse gas emissions by 30% by 2030 (Scope 1 and 2 CO<sub>2</sub>e, from a base year of 2018), with an ultimate aspiration to achieve net zero emissions.

Within Ribbon, our Real Estate and Supply Chain Management divisions monitor our energy consumption and waste, tracking our performance at each of our sites around the world. These teams are responsible for recommending and implementing operational efficiencies and recommending capital investment where relevant to support improving our energy, emissions and waste performance.

## 2. Strategy

### 2a. Climate-related risks and opportunities

Ribbon is primarily a contributor to climate change mitigation through the products and services we provide that accelerate and amplify digital transformation, a proven reliable enabler of a low carbon economy. Our business does not directly manufacture products, our infrastructure and direct greenhouse gas emissions are modest. We outsource our component manufacturing to large, reliable, robust third-party manufacturers who have a presence in multiple international locations. This enables us to implement a flexible and efficient manufacturing and logistics landscape for each product line and target markets. This structure also facilitates business continuity to mitigate risks related to trade tariffs, natural disasters, critical material supply and other climate change impacts.

**Risks:** We review risks to our business annually in our Enterprise Risk Management program and seek to mitigate identified risks through risk management action tool and also through our Business Continuity Management program.

A preliminary assessment of climate change risks to our business indicates that there are no expected material impacts in the short term. In the medium to long term, we face potential disruption to services at our facilities, or disruption to internet infrastructure that could affect our customers. These risks are mitigated through our considerable flexibility of manufacturing, strong supplier relationships and of operations from our R&D and testing sites.

Our robust business continuity planning enables us to prepare effectively to safeguard against these risks. Additionally, in the medium to long term, we may face risks from increasing carbon regulation and pricing. We do not expect that this will materially affect our business, given our low carbon footprint today, which is also a result of our ongoing successes at optimizing our operational efficiencies and reducing our carbon footprint for over a decade. This gives us confidence that, as we plan to further reduce our carbon footprint, we expect this risk to reduce further in significance.

**Opportunities:** With ICT a major contributor to sustainable development and a low carbon economy, we see significant business opportunity in the continuation of provision of our products and services that support digitization of communications and national digital transformations. Currently, we are attracting many customers on the basis of our positive sustainability performance and our ability to help them meet their own climate change objectives and help them protect themselves against energy price volatility and carbon tariffs. We estimate that more than 65% of our annual global revenue is influenced by sustainability considerations and requirements from our customers.

## 2b. Impact on strategy

Ribbon intends to conduct a science-based analysis of potential climate change impacts on our business strategy, and we expect to disclose more extensively on this in future reports. Given the modest risk exposure of our business, we do not anticipate that a major strategic transformation will be required, but rather adjustments to new and emerging realities.

## 2c. Climate resilience

ICT is a major contributor to sustainable development and a low carbon economy, we see significant business opportunity in the continuation of provision of products and services that support digitization of communications and national digital transformations. We deliver 5G and are developing the next generation of network infrastructure, we provide essential services for national governments, utilities, education and healthcare sectors. We believe we are supporting climate resilience in many markets around the world and expect accelerated and expanded demand for our products over time, as global digital transformation continues to advance, especially in emerging economies.

## 3. Risk Management

### 3a. Process to identify climate change risk

Annually we use many expert sources of data, both internal and in the public domain to assign impact and likelihood scores to newly identified risks that may affect our business. Our Enterprise Risk Management program seeks to track mitigation of our identified risks through risk management actions and also through enhancements to our Business Continuity Management program.

### 3b. Process to manage climate change risks

Our Enterprise Risk Management program also seeks to review the previous scoring of identified risks and mitigate identified risks through risk management actions and also through our Business Continuity Management program. We maintain a companywide program that is carefully reviewed at each stage and involve reporting to our Executive management.

### 3c. Climate change integration

We have risk management, disaster preparedness, and business continuity plans that are fully integrated into our business planning and ongoing review. We believe these are robust enough to safeguard against climate change risks to Ribbon's business.

## 4. Metrics

### 4a. Metrics

Ribbon measures Scope 1 & Scope 2 GHG emissions, and partial Scope 3 emissions. We are looking to enhance our understanding and monitoring of Scope 3.

### 4b. Emissions performance

Scope 1 emissions	Unit	2017	2018	2019	2020
Natural gas	MT CO <sub>2</sub> e	695	959	1,127	983
Diesel	MT CO <sub>2</sub> e	127	198	129	69
Gasoline	MT CO <sub>2</sub> e	1,364	2,762	1,007	1,643
<b>Total Scope 1 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>2,186</b>	<b>3,919</b>	<b>2,263</b>	<b>2,695</b>

Scope 2 emissions	Unit	2017	2018	2019	2020
Purchased electricity (market based)	MT CO <sub>2</sub> e	18,786	21,641	21,218	20,422
Purchased heating	MT CO <sub>2</sub> e	0	23	0	101
Purchased cooling	MT CO <sub>2</sub> e	0	268	0	916
<b>Total Scope 2 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>18,786</b>	<b>21,932</b>	<b>21,218</b>	<b>21,439</b>
<b>Total Scope 1 &amp; 2 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>20,972</b>	<b>25,851</b>	<b>23,481</b>	<b>24,135</b>

Scope 3 emissions	Unit	2017	2018	2019	2020
Business travel	MT CO <sub>2</sub> e	3,676	3,343	3,416	632
Employee commuting	MT CO <sub>2</sub> e				1,198
<b>Total Scope 3 GHG emissions</b>	<b>MT CO<sub>2</sub>e</b>	<b>3,676</b>	<b>3,343</b>	<b>3,416</b>	<b>1,830</b>
Scope 3 GHG emissions intensity	MT CO <sub>2</sub> e / employee	0.89	0.87	0.86	0.48

**Note:** MT = metric tons.

### 4c. Targets

Reduce direct carbon emissions by 30% by 2030 (Scope 1 and 2 CO<sub>2</sub>e, from a base year of 2018).

Longer term, we aspire to achieve net zero greenhouse gas emissions.

