Management’s Discussion and Analysis of Financial Condition and Results of Operations

This discussion and analysis contains forward-looking statements within the meaning of the U.S. Private Securities Litigation Reform Act of 1995, and we intend that such forward-looking statements be subject to the safe harbors created thereby. Forward-looking statements are statements other than historical information or statements of current condition. Words such as may, expect, believe, plan, anticipate, intend, could, estimate, continue, or similar expressions or the negative of such expressions are intended to identify forward-looking statements. In addition, any statements that refer to expectations, projections or other characterizations of future events and circumstances are considered forward-looking statements. They are not guarantees of future performance and involve risks and uncertainties. Actual results may differ materially from those in forward-looking statements due to various factors including, but not limited to, macroeconomic uncertainty, including trade wars and recessions; our ability to successfully integrate businesses that we acquire; capital spending and network deployment levels in the telecommunications industry (including our ability to quickly adapt cost structures to anticipated levels of business and our ability to manage inventory levels with market demand); future economic, competitive, financial and market conditions; consolidation in the global communications test, monitoring and analytics solutions markets and increased competition among vendors; capacity to adapt our future product offering to future technological changes; limited visibility with regard to the timing and nature of customer orders; delay in revenue recognition due to longer sales cycles for complex systems involving customers’ acceptance; fluctuating exchange rates; concentration of sales; timely release and market acceptance of our new products and other upcoming products; our ability to successfully expand international operations and to conduct business internationally; and the retention of key technical and management personnel. Assumptions relating to the foregoing involve judgments and risks, all of which are difficult or impossible to predict and many of which are beyond our control. Other risk factors that may affect our future performance and operations are detailed in our Annual Report, on Form 20-F, and our other filings with the U.S. Securities and Exchange Commission and the Canadian securities commissions. We believe that the expectations reflected in the forward-looking statements are reasonable based on information currently available to us, but we cannot assure you that the expectations will prove to have been correct. Accordingly, you should not place undue reliance on these forward-looking statements. These statements speak only as of the date of this document. Unless required by law or applicable regulations, we undertake no obligation to revise or update any of them to reflect events or circumstances that occur after the date of this document. This discussion and analysis should be read in conjunction with the consolidated financial statements.

The following discussion and analysis of financial condition and results of operations is dated November 26, 2019.

All financial data are expressed in US dollars, except as otherwise noted, and determined based on International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB). This discussion and analysis also contains financial data that do not comply with IFRS. Where such measures are presented, they are defined, and the reader is informed.

COMPANY OVERVIEW

We are a leading provider of test, monitoring and analytics solutions for fixed and mobile communications service providers (CSPs), web-scale operators and network equipment manufacturers (NEMs) in the global communications industry. Our broad portfolio of intelligent hardware and software solutions enable transformations related to fiber, 5G and network virtualization. Ultimately, customers rely on our solutions to increase network capacity and improve quality of experience for end-users while driving operational efficiencies.

Our success has been largely predicated on our core expertise in developing test equipment for fixed networks. These solutions are available as handheld test instruments, portable platforms with related modules, and as rack-mounted chassis with related modules. Our PC-centric, open-ended platforms, combined with cloud-based software applications, can be transformed into a fully connected test environment that allows CSPs to automate complex, labor-intensive tasks like fiber-to-the-antenna (FTTA), distributed antenna system (DAS) and small cell deployments. Leveraging platform connectivity, CSPs can also keep track of their entire test fleet, manage software updates and schedule calibration procedures. All test data can be stored in a central database and used as a point of reference against future measurements. Consequently, this enhanced test environment enables customers to increase productivity and reduce operating expenses.

Over the years, we have expanded our product portfolio into fiber monitoring, IP (Internet protocol) service assurance as well as monitoring of 2G, 3G, 4G/LTE and 5G mobile networks. Our fiber-monitoring solution leverages EXFO's expertise and market leadership in optical time domain reflectometry (OTDR) by using this technology as remote test units (RTUs) to monitor an optical plant 24 hours per day, seven days per week. This fiber monitoring solution proactively detects any fiber degradation or locates any fiber cut to optimize quality of service along long-haul, metro and access networks. Our IP service assurance solution is a probe-based hardware and software offering that delivers quality-of-service visibility as well as real-time service monitoring and verification of next-generation IP networks. We have enriched our IP service assurance offering, which can also be virtualized, with infrastructure performance management tools, analytics software and network topology discovery solutions via technology acquisitions.

Following the acquisition of Astellia S.A. (renamed EXFO Solutions S.A.S.) in January 2018, EXFO offers monitoring solutions for multi-technology mobile networks (2G, 3G, 4G, 5G). The EXFO-Astellia portfolio provides mobile CSPs with capabilities to detect, correlate, analyze, report, geolocate and troubleshoot issues related to network performance, handset behavior and service usage. These solutions can be fully virtualized and combined with information from call traces, third-party probes, CRM, billing, etc., to optimize a big data framework.

Our mobile portfolio also consists of network simulators and optical radio frequency (RF) test solutions. Our network simulators simulate real-world, large-scale network traffic and end-user behavior in a laboratory environment to predict network behavior, uncover faults and optimize networks before mobile networks and services are deployed. Our optical RF test solutions are dedicated to turning up and troubleshooting fiber-based mobile networks. These solutions are critical for locating and analyzing RF interference issues in FTTA, DAS, remote radio heads and baseband units that support 4G/LTE and 5G networks.

The competitive advantages of our products include a high degree of innovation, modularity (especially wireline products) and ease of use. Our products enable NEMs, CSPs and web-scale operators to design, deploy, troubleshoot and monitor fixed and mobile networks and, in the process, they help them reduce the cost of operating their networks.

We have a staff of approximately 1,900 people in 25 countries, supporting more than 2,000 customers around the world. We operate three main manufacturing sites, which are located in Québec City, Canada, Shenzhen, China, and Lannion, France, and we have facilities in Rennes, France, and Oulu, Finland, for product configuration, software loading, quality control and shipping of monitoring systems. We also have five main research and development expertise centers in Montréal, Québec City, Rennes, Oulu and London, supported by a software development center in India.

We released a number of key solutions in fiscal 2019 that enable customers to accelerate their network transformations. We introduced a new category of fiber-testing solutions with the launch of the industry's first optical fiber multimeter. This innovative test instrument simplifies the task of frontline technicians by automatically evaluating the quality of fiber links in a matter of seconds. We also expanded our 400G test portfolio with the launch of a module featuring an Open Transceiver System. This modular design enables compatibility between current and future high-speed transceivers with EXFO's field and lab test platforms. In addition, we released an automated fiber inspection tool for testing polarity, continuity and connector cleanliness on multifiber cables.

Our sales, which include a full-year contribution from newly acquired EXFO Solutions S.A.S. (formerly Astellia S.A.), compared to a seven-month contribution last year, increased 6.4% to $286.9 million in fiscal 2019 from $269.5 million in 2018. Bookings (purchase orders received from customers), which include a full-year contribution from EXFO Solutions, increased 11.2% to $297.8 million in fiscal 2019, for a book-to-bill ratio of 1.04, from $267.7 million in 2018.

Net loss attributable to the parent interest amounted to $2.5 million, or $0.04 per share, in fiscal 2019, compared to $11.9 million, or $0.22 per share in fiscal 2018. Net loss attributable to the parent interest in fiscal 2019 included net expenses totaling $15.1 million, comprising $7.8 million in after-tax amortization of intangible assets, $1.8 million in stock-based compensation costs, $3.2 million in after-tax restructuring charges, $1.4 million for the acquisition-related deferred revenue fair value adjustment, and a foreign exchange loss of $0.9 million. Net loss attributable to the parent interest also includes $1.7 million for a gain on disposal of capital assets and $2.4 million for a deferred income tax recovery. Net loss attributable to the parent interest in fiscal 2018 included net expenses totaling $17.1 million, comprising $9.4 million in after-tax amortization of intangible assets, $1.7 million in stock-based compensation costs, $3.4 million in after-tax restructuring charges, $2.1 million for the acquisition-related deferred revenue fair value adjustment, $0.7 million in positive change in the fair value of the cash contingent consideration, $2.5 million in after-tax acquisition-related costs, and a foreign exchange gain of $1.3 million.

Adjusted EBITDA (net earnings (loss) attributable to the parent interest before interest and other expense, income taxes, depreciation and amortization, stock-based compensation costs, restructuring charges, acquisition-related deferred revenue fair value adjustment, change in fair value of cash contingent consideration, and foreign exchange gain or loss) amounted to $25.6 million, or 8.9% of sales, in fiscal 2019, compared to $17.2 million, or 6.4% of sales in 2018. Adjusted EBITDA is a non-IFRS measure. See page 24 of this document for a complete reconciliation of adjusted EBITDA to IFRS net earnings (loss) attributable to the parent interest.

In September 2018, as part of our fiscal 2018 restructuring plan and the shutdown of our operations in Toronto, Canada, we entered into a binding agreement to sell one of our buildings for net proceeds of $3.3 million. The transfer of ownership occurred during fiscal 2019 and resulted in a gain of $1.7 million that was recorded in interest and other income (expense) line item in our consolidated statement of earnings for that year.

In addition, in fiscal 2019, as part of our fiscal 2018 restructuring plan and the shutdown of some of our facilities in the United States, we transferred the ownership of certain intellectual property held in the United States to Canada. This created a deductible tax asset in Canada and resulted in the recognition of a one-time deferred income tax recovery of $2.4 million in fiscal 2019 as the recovery of this asset is probable. This deferred income tax recovery was recorded in our consolidated statement of earnings for that year.

Adjusted EBITDA outlook

Short-term target

Fiscal 2019

In fiscal 2018, we had established an adjusted EBITDA target of $24 million for fiscal 2019. Actual adjusted EBITDA reached $25.6 million, or 8.9% of sales, slightly higher than expected.

Fiscal 2020

For fiscal 2020, considering results achieved in fiscal 2019, the anticipated increase in sales volume and the resulting improved fixed-cost absorption, the full impact of our fiscal 2018 restructuring plan, as well as the impact of the upcoming adoption of IFRS 16, ''Leases'', on September 1, 2019, we forecast adjusted EBITDA of $33 million. The adoption of IFRS 16 is expected to increase adjusted EBITDA by approximately $4 million in fiscal 2020. Our adjusted EBITDA target also considers constant currencies.

Medium-term target

In fiscal 2018, we established an adjusted EBITDA margin target of 15% of sales for the next three years (2019 to 2021). This medium-term adjusted EBITDA target was established based on expected sales increase mainly from our service assurance, systems and services (SASS) product line (which represented 27% of sales in fiscal 2018). This product line delivers a higher gross margin before depreciation and amortization than our test and measurement (T&M) product line (which represented 73% of our sales in fiscal 2018), due to its richer software content. In addition, we expect higher growth from our SASS product line over the next three years, as it represents a much larger addressable market ($2.5 billion+) compared to our T&M product line ($900 million) and for which our market share is lower compared to our T&M product line. This growth is expected to come from organic growth as well as through acquisitions, like those completed in fiscal 2017 and 2018 (Absolute Analysis Inc. (Absolute), Ontology Partners Limited (Ontology) and EXFO Solutions) and from related synergies. Furthermore, this sales growth should result in better absorption of our fixed manufacturing costs, which would increase our gross margin before depreciation and amortization and our adjusted EBITDA. A large portion of our operating costs is fixed mainly for research and development expenses as well as administrative expenses. Our adjusted EBITDA target also considers constant currencies.

Despite the positive impact the adoption of IFRS 16 will have on Adjusted EBITDA going forward, we reaffirm our adjusted EBITDA target of 15% for the next two years.

These short-term and medium-term adjusted EBITDA targets are forward-looking statements. In addition, as they exclude items that pertain to future events that are not currently estimable with a reasonable degree of accuracy, such as foreign exchange gain or loss and income taxes, no corresponding IFRS measure has been provided.

Sales

We sell our products to a diversified customer base in approximately 100 countries through our direct sales force and channel partners, such as sales representatives and distributors. Most of our sales are denominated in US dollars, euros and Canadian dollars.

In fiscal 2018 and 2019, no customer accounted for more than 10% of our sales, with our top customer representing 9.1% and 6.9% of our sales respectively. In fiscal 2017, our top customer represented 10.1% of our sales.

We believe that we have a vast array of products, a diversified customer base and a good spread across geographical areas, which provides us with reasonable protection against concentration of sales and credit risk.

Cost of Sales

The cost of sales includes raw materials, salaries and related expenses for direct and indirect manufacturing personnel and professional services, as well as overhead costs. Excess, obsolete and scrapped materials are also included in the cost of sales. However, the cost of sales is presented exclusive of depreciation and amortization, which are shown separately in the consolidated statements of earnings.

Selling and administrative, and research and development expenses

Selling and administrative expenses consist primarily of salaries and related expenses for personnel, sales commissions, travel expenses, marketing programs, professional services, information systems, human resources and other corporate expenses.

Gross research and development expenses consist primarily of salaries and related expenses for engineers and other technical personnel, material component costs as well as fees paid to third-party consultants. We are eligible to receive research and development tax credits on research and development activities carried out in Canada and France. All related research and development tax credits are recorded as a reduction of gross research and development expenses.

RESULTS OF OPERATIONS

(in thousands of US dollars, except per share data, and as a percentage of sales for the years indicated)

Consolidated statement of earnings data: [1]	**2019**	2018	2017	**2019**	2018	2017
Sales	**$ 286,890**	$ 269,546	$ 243,301	**100.0 %**	100.0 %	100.0 %
Cost of sales [2]	**118,677**	105,004	94,329	**41.4**	39.0	38.8
Selling and administrative	**98,646**	98,794	86,256	**34.4**	36.7	35.5
Net research and development	**50,553**	57,154	47,168	**17.6**	21.2	19.4
Depreciation of property, plant and equipment	**5,469**	5,444	3,902	**1.9**	2.0	1.6
Amortization of intangible assets	**9,012**	10,327	3,289	**3.1**	3.8	1.4
Change in fair value of cash contingent consideration	–	(670)	(383)	–	(0.3)	(0.2)
Interest and other expense	**718**	1,378	303	**0.3**	0.5	0.1
Foreign exchange (gain) loss	**949**	(1,309)	978	**0.3**	(0.5)	0.4
Share in net loss of an associate	–	2,080	–	–	0.8	–
Gain on deemed disposal of the investment in an associate	–	(2,080)	–	–	(0.8)	–
Earnings (loss) before income taxes	**2,866**	(6,576)	7,459	**1.0**	(2.4)	3.0
Income taxes	**5,346**	5,678	6,608	**1.9**	2.1	2.7
Net earnings (loss) for the year	**(2,480)**	(12,254)	851	**(0.9)**	(4.5)	0.3
Net loss for the year attributable to non-controlling interest	–	(352)	–	–	(0.1)	–
Net earnings (loss) for the year attributable to the parent interest	**$ (2,480)**	$ (11,902)	$ 851	**(0.9)%**	(4.4)%	0.3 %
Basic and diluted net earnings (loss) attributable to the parent interest per share	**$ (0.04)**	$ (0.22)	$ 0.02			
Other selected information:						
Gross margin before depreciation and amortization [3]	**$ 168,213**	$ 164,542	$ 148,972	**58.6 %**	61.0 %	61.2 %
Research and development data:						
Gross research and development	**$ 57,972**	$ 65,243	$ 53,124	**20.2 %**	24.2 %	21.8 %
Restructuring charges included in:						
Cost of sales	**$ 304**	$ 517	$ 1,697	**0.1 %**	0.2 %	0.7 %
Selling and administrative expenses	**$ 495**	$ 673	$ 1,150	**0.2 %**	0.2 %	0.5 %
Net research and development expenses	**$ 2,506**	$ 3,219	$ 2,232	**0.9 %**	1.2 %	0.9 %
Adjusted EBITDA [3, 4]	**$ 25,585**	$ 17,198	$ 22,041	**8.9 %**	6.4 %	9.1 %
Consolidated balance sheet data: [1]						
Total assets	**$ 277,602**	$ 284,544	$ 259,241			

(1) Consolidated statement of earnings and balance sheet data has been derived from our consolidated financial statements prepared according with IFRS, as issued by the IASB, except for non-IFRS measures.
(2) The cost of sales is exclusive of depreciation and amortization, shown separately.
(3) Refer to page 23 for non-IFRS measures.
(4) Includes acquisition-related costs of $2.2 million or 0.8% of sales in fiscal 2018 and $1.1 million or 0.4% of sales in 2017 (nil in 2019).

RESULTS OF OPERATIONS

Sales and Bookings

The following tables summarize sales and bookings by product line, in thousands of US dollars:

Sales

	Years ended August 31,		
	2019	2018	2017
Test and measurement	**$ 204,693**	$ 197,423	$ 193,863
Service assurance, systems and services	**82,788**	71,248	49,906
	287,481	268,671	243,769
Foreign exchange gains (losses) on forward exchange contracts	**(591)**	875	(468)
Total sales	**$ 286,890**	$ 269,546	$ 243,301

Bookings

	Years ended August 31,		
	2019	2018	2017
Test and measurement	**$ 210,055**	$ 193,836	$ 198,583
Service assurance, systems and services	**88,341**	72,982	53,651
	298,396	266,818	252,234
Foreign exchange gains (losses) on forward exchange contracts	**(591)**	875	(468)
Total bookings	**$ 297,805**	$ 267,693	$ 251,766

Sales by geographic region

The following table summarizes sales by geographic region:

	Years ended August 31,		
	2019	2018	2017
Americas	**50 %**	50 %	55 %
Europe, Middle East and Africa (EMEA)	**32**	32	26
Asia-Pacific (APAC)	**18**	18	19
	100 %	100 %	100 %

Fiscal 2019 vs. 2018

In fiscal 2019, our sales increased 6.4% to $286.9 million, compared to $269.5 million in 2018, while our bookings increased 11.2% year-over-year to $297.8 million in 2019 from $267.7 million in 2018, for a book-to-bill ratio of 1.04.

Sales

In fiscal 2019, the 6.4% increase in total sales year-over-year can be attributed to the positive effect of the acquisition of EXFO Solutions. EXFO Solutions contributed to our sales for the full reporting year in fiscal 2019 versus seven months in 2018. We also benefited from a $4.9 million order that was recognized in fiscal 2019 for our real-time network topology solution (no such order in fiscal 2018). Otherwise, our total sales were negatively affected by currency fluctuations year-over-year.

In fiscal 2019, sales of our T&M product line improved 3.7% year-over-year, despite a negative currency impact. In fiscal 2019, we generated increased sales from our high-speed optical transport solutions, as well as higher sales from EXFO Optics for advanced solutions dedicated to labs and NEM environments, compared to 2018.

In fiscal 2019, sales of our SASS product line increased 16.2% year-over-year, despite a negative currency impact, mainly because we benefited from the EXFO Solutions acquisition for the full reporting year versus seven months in 2018. We also benefited from a $4.9 million order that was recognized in fiscal 2019 for our real-time network topology solution (no such order in fiscal 2018).

Bookings

In fiscal 2019, our total bookings increased 11.2% year-over-year, mainly due to the positive effect of the acquisition of EXFO Solutions. EXFO Solutions contributed to our bookings for the full reporting year in fiscal 2019 versus seven months in 2018.

We also benefited from larger calendar year-end budget spending from CSPs in the Americas for our T&M products and we received a $4.9 million order for our real-time network topology solution (no such order in fiscal 2018), as well as four monitoring orders related to 5G deployments in fiscal 2019. Otherwise, in fiscal 2019, total bookings were negatively impacted by currency fluctuations year-over-year.

In fiscal 2019, bookings of our T&M product line increased 8.4% year-over-year mainly due to larger calendar year-end budget spending on the part of some CSPs in the Americas. Our high-speed optical transport and advanced solutions for NEMs and R&D labs also delivered higher bookings compared to 2018. This bookings increase was partially mitigated by the negative currency impact year-over-year.

In fiscal 2019, bookings of our SASS product line increased 21.0% year-over-year mainly due to the positive effect of the acquisition of EXFO Solutions. EXFO Solutions contributed to our bookings for the full period in fiscal 2019 versus seven months in 2018. We also benefited from the $4.9 million order for our real-time network topology solution, as well as four monitoring orders related to 5G deployments. Otherwise, in fiscal 2019, total bookings were negatively impacted by currency fluctuations year-over-year.

Fiscal 2018 vs. 2017

In fiscal 2018, our sales increased 10.8% to $269.5 million, compared to $243.3 million in 2017, while our bookings increased 6.3% year-over-year to $267.7 million in 2018 from $251.8 million in 2017, for a book-to-bill ratio of 0.99.

Sales

In fiscal 2018, the increase in total sales year-over-year comes from the positive effect of our acquisitions of EXFO Solutions (seven-month contribution) and EXFO Optics (eleven-month contribution), as well as the positive currency impact.

In fiscal 2018, sales of our T&M line increased 1.8% year-over-year mainly due to the acquisition of EXFO Optics and the positive currency impact.

Sales of our SASS product line increased 42.8% year-over-year in fiscal 2018, due to the positive effect of the acquisition of EXFO Solutions, higher sales of our network-quality fiber-monitoring systems (NQMS), as well as the positive currency impact. Otherwise, sales of our SASS product line slightly decreased year-over-year due to the streamlining of our passive monitoring product line in the second half of fiscal 2017, as well as the year-over-year decrease in sales of our legacy active monitoring product line.

Bookings

In fiscal 2018, the 6.3% increase in total bookings year-over-year comes from the positive effect of our acquisitions of EXFO Solutions (seven-month contribution), EXFO Optics (eleven-month contribution) and Ontology (full-year contribution in 2018 versus six-month contribution in 2017), a solid performance of our NQMS worldwide, as well as the positive currency impact, offset in part by lower bookings from our Transport and Datacom and passive monitoring product lines.

In fiscal 2018, bookings of our T&M product line decreased 2.4% year-over-year, despite the positive effect of the acquisition of EXFO Optics, as well as the positive currency impact year-over-year. In fiscal 2018, we reported lower bookings in APAC for our Transport and Datacom product line, which had delivered strong bookings in fiscal 2017 in this region. In addition, T&M bookings decreased year-over-year in APAC for both our optical (mainly in China due to delayed investments from NEMs as they prepare for 5G investments) and copper-access product lines, as well as in the Americas for our copper-access product line. Bookings of copper-testing solutions are characterized by large intermittent orders from customers.

Bookings of our SASS product line increased 36.0% year-over-year in fiscal 2018, due to the positive effect of the recent acquisition of EXFO Solutions, higher bookings for our NQMS solutions worldwide, as well as the positive currency impact. Bookings of NQMS are characterized by large intermittent orders from customers. However, we reported lower bookings for our passive-monitoring product line due to the streamlining of this product line in the second half of fiscal 2017.

As we gradually evolve from a supplier of dedicated test instruments to a supplier of end-to-end system-based solutions, our quarterly sales and bookings are becoming increasingly subject to quarterly fluctuations, as we are managing more complex, multimillion-dollar deals that have prolonged sales and revenue recognition cycles related to our protocol-layer products. This has been amplified with the recent acquisitions of EXFO Solutions and Ontology.

GROSS MARGIN BEFORE DEPRECIATION AND AMORTIZATION
(non-IFRS measure – refer to page 23 of this document)

Gross margin before depreciation and amortization amounted to 58.6%, 61.0% and 61.2% of sales in fiscal 2019, 2018 and 2017 respectively.

Fiscal 2019 vs. 2018

In fiscal 2019, EXFO Solutions, which contributed to our gross margin before depreciation and amortization for the full period compared to seven months in the same period last year, delivered lower margins than our typical corporate margin, as a large portion of its sales comprise professional services, which had a negative impact on our gross margin before depreciation and amortization year-over-year.

In addition, in fiscal 2019, our gross margin before depreciation and amortization was negatively affected by a less favorable sales mix compared to 2018.

Furthermore, in fiscal 2019, we recorded in our sales foreign exchange losses on our forward exchange contracts of $0.6 million, compared to foreign exchange gains of $0.9 million in 2018. This gap reduced our gross margin before depreciation and amortization by 0.2% year-over-year.

In addition, in fiscal 2019, we recorded higher inventory writeoffs compared to 2018, which contributed to decrease our gross margin before depreciation and amortization by 0.3% year-over-year.

Fiscal 2018 vs. 2017

In fiscal 2018, gross margin before depreciation and amortization included a negative impact of 0.3% of sales for the acquisition-related deferred revenue fair value adjustment from the acquisition of EXFO Solutions (nil in 2017).

In fiscal 2018, gross margin before depreciation and amortization included $0.5 million, or 0.2% of sales in restructuring charges for severance expenses, compared to $1.7 million or 0.7% of sales in 2017, which had a positive impact on our gross margin before depreciation and amortization year-over-year.

In addition, in fiscal 2018, we recorded in our sales foreign exchange gains on our forward exchange contracts, compared to foreign exchange losses in 2017, which contributed to an increase of 0.2% in gross margin before depreciation and amortization year-over-year.

However, newly acquired EXFO Solutions delivered lower margins than our typical average corporate margin, and we recorded slightly higher writeoffs (excluding those in restructuring expenses) compared to 2017, which had a negative impact on our gross margin before depreciation and amortization year-over-year.

SELLING AND ADMINISTRATIVE EXPENSES

Selling and administrative expenses amounted to $98.6 million, $98.8 million and $86.3 million for fiscal 2019, 2018 and 2017 respectively. As a percentage of sales, selling and administrative expenses amounted to 34.4%, 36.7% and 35.5% for fiscal 2019, 2018 and 2017 respectively.

Fiscal 2019 vs. 2018

In fiscal 2019, our selling and administrative expenses were slightly down ($0.2 million) in dollars compared to 2018.

In fiscal 2019, our selling and administrative expense includes $0.5 million in restructuring expenses compared to $ 0.7 million in fiscal 2018. In addition, in fiscal 2018, our selling and administrative expenses included $2.1 million (1.0% of sales) in acquisition-related costs following our business acquisitions, compared to nil in 2019.

In addition, in fiscal 2019, the positive impact of our 2018 restructuring plan reduced our selling and administrative expenses compared to 2018. Finally, the increase in the average value of the US dollar compared to other currencies had a positive impact on our selling and administrative expenses year-over-year.

However, in fiscal 2019, we incurred additional expenses compared to 2018, as we had the full-year contribution of EXFO Solutions, compared to a seven-month contribution in 2018. In addition, inflation and salary increases contributed to increasing our selling and administrative expenses year-over-year.

Fiscal 2018 vs. 2017

In fiscal 2018, our selling and administrative expenses increased $12.5 million year-over-year, mainly due to additional expenses following the acquisitions of EXFO Solutions (seven-month contribution), EXFO Optics (eleven-month contribution) and Ontology (full contribution in 2018 versus six-month contribution in 2017), inflation, salary increases, as well as increased acquisition-related costs of $1.1 million following the recent business acquisitions. In addition, in fiscal 2018, the decrease in the average value of the US dollar compared to other currencies had a negative impact on our selling and administrative expenses year-over-year.

However, in fiscal 2018, selling and administrative expenses included $0.7 million in restructuring charges compared to $1.2 million in 2017. In addition, the positive impact of our 2017 restructuring plan reduced our selling and administrative expenses year-over-year in fiscal 2018.

Excluding restructuring charges and acquisition-related costs for business combinations, our selling and administrative expenses would have represented 35.7% of sales, 1.1% higher compared to 34.6% of sales in 2017, due to the impact of the recent acquisitions and the negative currency impact.

RESEARCH AND DEVELOPMENT EXPENSES

Gross research and development expenses

Gross research and development expenses totaled $58.0 million, $65.2 million and $53.1 million for fiscal 2019, 2018 and 2017 respectively. As a percentage of sales, gross research and development expenses amounted to 20.2%, 24.2% and 21.8% for fiscal 2019, 2018 and 2017 respectively, while net research and development expenses accounted for 17.6%, 21.2% and 19.4% of sales for these respective years.

Fiscal 2019 vs. 2018

In fiscal 2019, our gross research and development expenses decreased $7.3 million compared to 2018.

In fiscal 2019, the positive impact of our 2018 restructuring plan reduced our gross research and development expenses compared to 2018. In addition, in fiscal 2019, the increase in the average value of the US dollar compared to other currencies had a positive impact on our gross research and development expenses year-over-year.

In addition, in fiscal 2018, we incurred restructuring charges of $3.2 million as part of our 2018 plan, compared to $2.5 million in 2019, which reduced our gross research and development expenses year-over-year.

On the other hand, in fiscal 2019, we incurred additional expenses compared to 2018, as we had the full contribution of EXFO Solutions, compared to a seven-month contribution in 2018. Gross research and development expenses were also subject to inflation and salary increases in fiscal 2019, which increased our expenses year-over-year.

In fiscal 2019, the impact of our fiscal 2018 restructuring plan resulted in lower gross research and development expenses as a percentage of sales compared to 2018.

Fiscal 2018 vs. 2017

In fiscal 2018, our gross research and development expenses increased $12.1 million year-over-year, mainly due to additional expenses following the acquisitions of EXFO Solutions (seven-month contribution), EXFO Optics (eleven-month contribution) and Ontology (full contribution in 2018 versus six-month contribution in 2017), as well as inflation and salary increases.

In addition, in fiscal 2018, our gross research and development expenses included $3.2 million in restructuring charges compared to $2.2 million in 2017.

Finally, in fiscal 2018, the decrease in the average value of the US dollar compared to other currencies had a negative impact on our gross research and development expenses year-over-year.

However, our gross research and development expenses decreased year-over-year due to the positive impact of our 2017 recent restructuring plan.

Excluding restructuring charges, which represent 1.2% of sales in fiscal 2018 compared to 0.9% of sales in 2017, our gross research and development expenses would have represented 23.0% of sales in 2018, 2.1% higher compared to 20.9% of sales in 2017, due to the impact of the recent acquisitions and the negative currency impact.

Tax Credits and Grants

We are entitled to tax credits for eligible research and development activities conducted in Canada and France.

Tax credits and grants for research and development activities were $7.4 million, $8.1 million and $6.0 million for fiscal 2019, 2018 and 2017 respectively. As a percentage of gross research and development expenses, tax credits and grants reached 12.8%, 12.4% and 11.2% for fiscal 2019, 2018 and 2017 respectively.

Fiscal 2019 vs. 2018

The decrease in our tax credits and grants in fiscal 2019, compared to 2018, comes from reduced gross research and development expenses in Canada and France as a result of the impact of our 2018 restructuring plan.

Fiscal 2018 vs. 2017

The increase in our tax credits and grants in fiscal 2018, compared to 2017, is mainly due to the acquisitions of EXFO Solutions (seven-month contribution) and EXFO Optics (eleven-month contribution) that are entitled to tax credits and grants on research and development activities carried out in France. This also explains the increase in tax credits and grants as a percentage of gross research and development expenses year-over-year.

AMORTIZATION OF INTANGIBLE ASSETS

In conjunction with the business combinations we completed, we recorded intangible assets primarily consisting of core technologies and customer relationships. In addition, intangible assets include software. These intangible assets resulted in amortization expenses of $9.0 million, $10.3 million and $3.3 million for fiscal 2019, 2018 and 2017 respectively.

Fiscal 2019 vs. 2018

In fiscal 2019, amortization of intangible assets decreased of 1.3 million year-over-year, despite the full contribution of EXFO Solutions, compared to a seven-month contribution in 2018. The year-over-year decrease is due to the fact that some acquired intangible assets became fully amortized in fiscal 2019.

Fiscal 2018 vs. 2017

The increase in our amortization expense in fiscal 2018, compared to 2017, is due to the acquisitions of EXFO Solutions (seven-month contribution), EXFO Optics (eleven-month contribution) and Ontology (full contribution in 2018 compared to six-month contribution in 2017), as well as the decrease in the average value of the US dollar compared to other currencies year-over-year.

FOREIGN EXCHANGE GAIN (LOSS)

Foreign exchange gains and losses are mainly the result of the translation of operating activities denominated in currencies other than our functional currency, which is the Canadian dollar. A portion of our foreign exchange gains or losses results from the translation of cash balances and deferred income taxes denominated in US dollars. We manage our exposure to currency risk in part with forward exchange contracts. In addition, some of our entities' operating activities are denominated in US dollars, euros and British pounds, which further hedges this risk. However, we remain exposed to a currency risk; namely, any increase in the value of the Canadian dollar compared to the US dollar would have a negative impact on our operating results.

We reported a foreign exchange loss of $0.9 million in fiscal 2019, compared to a gain of $1.3 million in 2018 and a loss of $1.0 million in 2017.

Fiscal 2019

In fiscal 2019, we witnessed some volatility in the value of the Canadian dollar as it fluctuated compared to the US dollar, which overall resulted in a foreign exchange loss of $0.9 million. The period-end value of the Canadian dollar decreased 1.8% versus the US dollar to CA$1.3294 = US$1.00 in fiscal 2019 compared to CA$1.3055 = US$1.00 at the end of the previous year. In fiscal 2019, the average value of the Canadian dollar versus the US dollar was CA$1.3247 = US$1.00.

Fiscal 2018

In fiscal 2018, the period-end value of the Canadian dollar decreased versus the US dollar, compared to the previous year-end, which resulted in a foreign exchange gain of $1.3 million during that year. The period-end value of the Canadian dollar decreased 4.1% versus the US dollar to CA$1.3055 = US$1.00 in fiscal 2018, compared to CA$1.2536 = US$1.00 at the end of the previous year. In fiscal 2018, the average value of the Canadian dollar versus the US dollar was CA$1.2768 = US$1.00.

Fiscal 2017

In fiscal 2017, the period-end value of the Canadian dollar increased versus the US dollar compared to the previous year-end, which resulted in a foreign exchange loss of $1.0 million during the year. The period-end value of the Canadian dollar increased 4.4% versus the US dollar to CA$1.2536 = US$1.00 in fiscal 2017 compared to CA$1.3116 = US$1.00 at the end of the previous year. In fiscal 2017, the average value of the Canadian dollar versus the US dollar was CA$1.3212 = US$1.00.

Foreign exchange rate fluctuations also flow through the consolidated statement of earnings line items as portions of our sales are dominated in Canadian dollars and euros and significant portions of our cost of sales and operating items are denominated in Canadian dollars, euros, Indian rupees, British pounds, and CNY, and we report our results in US dollars. In fiscal 2019, the increase in the average value of the US dollar compared to the Canadian dollar, the euro, the British pound, the Indian Rupee and the CNY year-over-year, resulted in a positive impact on our expenses. The average value of the US dollar increased 3.8%, 4.9%, 4.8%, 7.2% and 3.9% respectively year-over-year, compared to the Canadian dollar, the euro, the British pound, the Indian Rupee and the CNY.

INCOME TAXES

In fiscal 2019, we reported income tax expenses of $5.3 million on earnings before income taxes of $2.9 million, compared to income tax expenses of $5.7 million on a loss before income taxes of $6.6 million in 2018 and income tax expenses of $6.6 million on earnings before income taxes of $7.5 million in 2017.

Discrete items affecting our effective income tax rate

Fiscal 2019

In fiscal 2019, as part of our fiscal 2018 restructuring plan and the shutdown of some of our facilities in the United States, we transferred the ownership of certain intellectual property held in the United States to Canada. This created a deductible tax asset in Canada and resulted in the recognition of a deferred income tax recovery of $2.4 million in fiscal 2019 as the recovery of this asset is probable.

Fiscal 2018

In December 2017, the US tax reform ("Tax Cuts and Jobs Act") was substantively enacted and reduced the maximum corporate income tax rate from 35% to 21%, effective January 1, 2018. Based on our estimate of deferred tax assets expected to be used in fiscal 2018 and beyond against taxable income in the United States, we recorded a deferred income tax expense of $1.5 million in fiscal 2018 to account for the effect of this new substantively enacted tax rate.

Our distorted tax rates for all periods mainly resulted from the fact that we did not recognize deferred income tax assets for some of our subsidiaries at loss and acquisition-related costs for business combinations incurred in fiscal 2017 and 2018 were non-deductible for tax purposes. In addition, we had some other non-deductible losses and expenses, such as stock-based compensation costs. However, a significant portion of our foreign exchange gain or loss was a result of the translation of the financial statements of our foreign subsidiaries from their local currency to the functional currency and was therefore non-taxable or non-deductible. Otherwise, our effective tax rate would have been closer to the combined Canadian and provincial statutory tax rate of 27% for this year.

Please refer to note 20 to our consolidated financial statements for a full reconciliation of our income tax provision.

LIQUIDITY AND CAPITAL RESOURCES

Cash Requirements and Capital Resources

As at August 31, 2019, cash and short-term investments totaled $19.4 million, while our working capital was at $39.1 million. Our cash and short-term investments increased $4.4 million in fiscal 2019, compared to 2018.

The following table summarizes the increase of cash and short-term investments in fiscal 2019 in thousands of US dollars:

Cash flows provided by operating activities	$ 17,242
Proceeds from disposal of capital assets	3,318
Purchases of capital assets	(7,498)
Repayment of bank loan	(5,195)
Repayment of long-term debt and other liabilities	(2,817)
Redemption of share capital	(312)
Unrealized foreign exchange loss on cash and short-term investments	(342)
	$ 4,396

Our short-term investments consist of debt instruments issued by high-credit quality corporations; therefore, we consider the risk of non-performance of these financial instruments to be limited. These debt instruments are not expected to be affected by a significant liquidity risk. For the purpose of managing our cash position, we have established a cash management policy, which we follow and monitor on a regular basis.

We believe that our cash balances and short-term investments totaling $19.4 million, combined with our available revolving credit facilities of up to $56.5 million, will be sufficient to meet our liquidity and capital requirements for the foreseeable future, including any possible working capital requirements from our new acquisitions. In addition to these assets and credit facilities, we have unused available lines of credit of $21.9 million for foreign currency exposure related to forward exchange contracts. However, possible operating losses, additional restructuring costs and/or possible investments in or acquisitions of complementary businesses, products or technologies may require additional financing. There can be no assurance that additional debt or equity financing will be available when required or, if available, that it can be secured on satisfactory terms.

Sources and Uses of Cash

We finance our operations and meet our capital expenditure requirements through a combination of cash flows from operating activities, the use of our cash and short-term investments, borrowing under our existing credit facilities as well as the issuance of subordinate voting shares.

Operating activities

Cash flows provided by operating activities were $17.2 million in fiscal 2019, compared to $14.4 million in 2018 and $12.9 million in 2017.

Fiscal 2019 vs. 2018

Cash flows provided by operating activities in fiscal 2019 were attributable to net earnings after items not affecting cash of $21.8 million, offset in part by the negative net change in non-cash operating items of $4.6 million; this was mainly due to the negative effect on cash of the increase of $4.8 million in our accounts receivable due to the timing of receipts and sales during the year, the negative effect on cash of the increase of $1.3 million in our prepaid expenses due to timing of payments during the year, the negative effect on cash of the $1.5 million increase in our other assets due to the timing of payments during the year, and the negative effect on cash of the $1.6 million decrease in our other liabilities due to the repayments made during the year. These negative effects on cash were offset in part by the positive effect on cash of the $1.5 million decrease in our income tax and tax credits recoverable due to tax credits recovered during the year and the positive effect on cash of the increase of $3.2 million in our accounts payable and accrued liabilities and provisions due to timing of purchases and payments during the year.

Fiscal 2018 vs. 2017

Cash flows provided by operating activities in fiscal 2018 were attributable to net earnings after items not affecting cash of $8.4 million, and the positive net change in non-cash operating items of $6.0 million; this was mainly due to the positive effect on cash of the decrease of $7.3 million in our accounts receivable due to the timing of receipts and sales during the year, and the increase of $1.0 million in our accounts payable and accrued liabilities and provisions due to timing of purchases and payments during the year. These positive effects on cash were offset in part by the negative effect on cash of the $1.0 million increase in our inventories to meet future demand and the negative effect on cash of the $1.3 million increase in our other assets due to the timing of payments during the year.

Investing activities

Cash flows used by investing activities amounted to $4.9 million in fiscal 2019, compared to $43.9 million in 2018 and $16.5 million in 2017.

Fiscal 2019

In fiscal 2019, we made cash payments of $7.5 million for the purchase of capital assets and we acquired (net of disposal) $0.7 million worth of short-term investments. However, during the year, we received net proceeds of $3.3 million from the sale of capital assets.

Fiscal 2018

In fiscal 2018, we made cash payments of $10.5 million and $32.1 million respectively for the purchase of capital assets and the acquisitions of EXFO Optics and EXFO Solutions. In addition, we acquired (net of disposal) $1.3 million worth of short-term investments during the year.

Fiscal 2017

In fiscal 2017, we made cash payments of $12.8 million and $7.2 million respectively for the acquisitions of Absolute and Ontology and the purchase of capital assets. Otherwise, we disposed (net of acquisitions) of $3.5 million worth of short-term investments.

Financing activities

Cash flows used by financing activities amounted to $8.3 million in fiscal 2019, compared to cash flows provided of $4.3 million in 2018 and cash flows used of $1.5 million in 2017.

Fiscal 2019

In fiscal 2019, our bank loan decreased by $5.2 million, we repaid $2.8 million of our long-term debt and other liabilities, and we redeemed share capital for $0.3 million.

Fiscal 2018

In fiscal 2018, our bank loan increased by $11.1 million, but we repaid $3.1 million of our long-term debt and other liabilities and paid $3.7 million for the purchase of the non-controlling interest in EXFO Solutions.

Fiscal 2017

In fiscal 2017, we repaid the long-term debt of $1.5 million assumed as part of the acquisition of Ontology.

Contractual obligations

We are committed under the terms of contractual obligations which have various expiration dates, primarily for the rental of premises and equipment, licensing of intellectual property and long-term debt. The following table summarizes our contractual obligations, on an undiscounted basis, as at August 31, 2019 in thousands of US dollars:

	Long-term debt	Operating leases	Licensing agreements	Total
No later than one year	$ 2,449	$ 2,895	$ 2,289	$ 7,633
Later than one year and no later than five years	3,237	6,323	2,444	12,004
Later than five years	56	23	–	79
	$ 5,742	$ 9,241	$ 4,733	$ 19,716

Upon the adoption of IFRS 16, ''Leases'', on September 1, 2019, obligations under operating leases will be accounted in the consolidated balance sheet as right-of-use assets and lease liabilities measured at the present value of lease payments on date of adoption. See the New IFRS pronouncements section further in this document for a complete description of the impacts of the adoption of IFRS 16.

In addition, on August 31, 2019, we had letters of guarantee amounting to $0.7 million for our own selling and purchasing requirements, which were reserved from our lines of credit; these letters of guarantee expire at various dates through fiscal 2022.

FORWARD EXCHANGE CONTRACTS

We are exposed to currency risk as a result of our export sales of products manufactured in Canada, China, France, and Finland, the majority of which are denominated in US dollars and euros. In addition, we are exposed to currency risk as a result of our research and development activities in India (Indian rupees). These risks are partially hedged by forward exchange contracts. Forward exchange contracts, which are designated as cash flow hedging instruments, qualify for hedge accounting.

As at August 31, 2019, we held forward exchange contracts to sell US dollars for Canadian dollars and Indian rupees at various forward rates, which are summarized as follows:

US dollars – Canadian dollars

Expiry dates	**Contractual amounts**	**Weighted average contractual forward rates**
September 2019 to August 2020	$ 35,500,000	1.3013
September 2020 to August 2021	19,900,000	1.3107
September 2021 to July 2022	6,000,000	1.3216
Total	$ 61,400,000	1.3063

US dollars – Indian rupees

Expiry dates	**Contractual amount**	**Weighted average contractual forward rate**
September 2019 to August 2020	$ 3,500,000	71.48

The carrying amount of forward exchange contracts is equal to fair value, which is based on the amount at which they could be settled based on estimated current market rates. The fair value of forward exchange contracts amounted to net losses of $0.5 million and of $1.0 million as at August 31, 2018 and 2019 respectively. The US dollar – Canadian dollar year-end exchange rate was CA$1.3294 = US$1.00 as at August 31, 2019.

SHARE CAPITAL

As at November 11, 2019, EXFO had 31,643,000 multiple voting shares outstanding, entitling to 10 votes each and 23,869,117 subordinate voting shares outstanding. The multiple voting shares and the subordinate voting shares are unlimited as to number and are without par value.

OFF-BALANCE SHEET ARRANGEMENTS

As at August 31, 2019, our off-balance sheet arrangements consisted of letters of guarantee amounting to $0.7 million for our own selling and purchasing requirements, which were reserved from our lines of credit; these letters of guarantee expire at various dates through fiscal 2022.

STRUCTURED ENTITIES

As at August 31, 2019, we did not have interests in any structured entities.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of financial statements in accordance with IFRS requires us to make judgments, estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses and the disclosures of contingent assets and liabilities at the date of the financial statements. On an ongoing basis, we evaluate these estimates and assumptions, including those related to the fair value of assets and liabilities acquired in business combinations, the fair value of financial instruments, the allowance for doubtful accounts receivable, the amount of tax credits recoverable, the provision for excess and obsolete inventories, the estimated useful lives of capital assets, the valuation of long-lived assets, the impairment of goodwill, the recoverable amount of deferred income tax assets, the amount of certain accrued liabilities, provisions and deferred revenue as well as stock-based compensation costs. We base our estimates and assumptions on historical experience and on other factors that we believe to be reasonable under the circumstances.

Critical Judgments in Applying Accounting Policies

(a) Determination of functional currency

We operate in multiple countries and generate revenue and incur expenses in several currencies, namely the Canadian dollar, the US dollar, the euro, the British pound, the Indian rupee and the CNY (Chinese currency). The determination of the functional currency of EXFO and its subsidiaries may require significant judgment. In determining the functional currency of EXFO and its subsidiaries, we take into account primary, secondary and tertiary indicators. When indicators are mixed, and the functional currency is not obvious, we use our judgment to determine the functional currency.

(b) Determination of cash generating units and allocation of goodwill

For the purpose of impairment testing, goodwill must be allocated to each cash-generating unit (CGU) or group of CGUs that are expected to benefit from the synergies of the business combination. Initial allocation and possible reallocation of goodwill to a CGU or a group of CGUs requires judgment.

Critical Estimates and Assumptions

(a) Inventories

We state our inventories at the lower of cost, determined on an average cost basis, and net realizable value, and we provide reserves for excess and obsolete inventories. We determine our reserves for excess and obsolete inventories based on the quantities on hand at the reporting dates compared to foreseeable needs, taking into account changes in demand, technology or market. It is possible that additional inventory reserves may occur if future sales are less than our forecasts or if there is a significant shift in product mix compared to our forecasts, which could adversely affect our results.

(b) Income taxes

We are subject to income tax laws and regulations in several jurisdictions. Under these laws and regulations, uncertainties exist with respect to the interpretation of complex tax regulations and the amount and timing of future taxable income. We maintain provisions for uncertain tax positions that we believe appropriately reflect our risk based on our interpretation of laws and regulations. In addition, we make reasonable estimates and assumptions to determine the amount of deferred tax assets that can be recognized in our consolidated financial statements, based upon the likely timing and level of anticipated future taxable income together with tax planning strategies. The ultimate realization of our deferred income tax assets is dependent upon the generation of sufficient future taxable income during the periods in which those assets are expected to be realized.

(c) Tax credits recoverable

Tax credits are recorded if there is reasonable assurance that we have complied and will comply with all the conditions related to the tax credits and that the tax credits will be received. The ultimate recovery of our Canadian non-refundable tax credits is dependent upon the generation of sufficient future taxable income during the tax credits carry-forward periods. We have made reasonable estimates and assumptions to determine the amount of non-refundable tax credits that can be recognized in our consolidated financial statements, based upon the likely timing and level of anticipated future taxable income together with tax planning strategies.

As at August 31, 2019, our Canadian non-refundable research and development tax credits recognized in the consolidated balance sheet amounted to $38.9 million. To recover these non-refundable research and development tax credits, we need to generate approximately $260 million (CA$345 million) in pre-tax earnings at the Canadian federal level. To generate this level pre-tax earnings at the Canadian federal level over the estimated recovery period of 16 years, we must generate a pre-tax earnings compound annual growth rate of 1%, which we believe is probable. Our non-refundable research and development tax credits can be carried forward over a 20-year period.

(d) Impairment of non-financial assets

Impairment exists when the carrying value of an asset or group of assets (cash generating unit (CGU)) exceeds its recoverable amount, which is the higher of its fair value less costs of disposal and its value in use. The fair value less costs of disposal calculation for our CGUs is based on a market approach that relies on input from implicit valuation multiples and recent transactions for comparable assets or businesses, within the same industry. We apply judgment in making adjustments for factors such as size, risk profile or profitability and also consider EXFO's value derived from its market capitalization considering a control premium based on comparable situations. Depending on the market evidence available, we, from time to time, may further supplement this market approach with an income approach that considers discounted cash flows to determine fair value less costs of disposal, as well as the nature and magnitude of research and development activities carried out by the CGU. The discounted cash flow model involves significant judgment with respect to estimating cash flows (based on market participant assumptions) and the appropriate discount rate.

In the fourth quarter of fiscal 2019, we performed our annual goodwill impairment test for all CGUs.

For the purposes of the impairment test, goodwill has been allocated to the lowest level within the company at which it is monitored by management to make business decisions, which are the following CGUs:

EXFO CGU	$	12,949,000
EXFO Optics CGU		3,376,000
Service assurance, systems and services (SASS) CGU		22,323,000
Total	$	38,648,000

Prior to fiscal 2019, the Brix, Ontology and EXFO Solutions CGUs have been identified as three separate CGUs for goodwill impairment testing as they represented the lowest level within EXFO at which the goodwill was monitored for internal management purposes, and the smallest group of assets that generated cash inflows that were largely independent of the cash inflows from other CGUs. However, at the end of August 2018, we implemented a restructuring plan to fast-track the integration of newly acquired EXFO Solutions' and Ontology's technologies with those of our service assurance on a common monitoring and analytics platform to better position the company's offering and reduce its costs. Consequently, starting September 1, 2018, following the announcement of this plan, all future operating and investing decisions related to these three CGUs have been aligned with the restructuring plan and related goodwill, previously allocated to each of these three CGUs, has been monitored for internal management purposes on a combined basis under the Service assurance, systems and services (SASS) CGU, which represented the smallest group of assets that would generate future cash inflows that would largely be independent of the cash inflows from the other CGUs.

In fiscal 2018, the goodwill impairment test has been performed closely to the date of the goodwill reallocation from the Brix, Ontology and EXFO Solutions' GCUs to the SASS CGU and goodwill of each of the three CGUs was not impaired. Consequently, no goodwill impairment test was performed on the date of goodwill reallocation to the combined goodwill.

In performing the fiscal 2019 goodwill impairment review of our CGUs, we determined the recoverable amount of goodwill based on fair value less costs of disposal. In estimating the recoverable amount of its CGUs, we used a market approach, which is based on sales multiples within the range of 1.0 to 7.6 times sales, for comparable businesses with similar operations within the same industry over the past year. We applied judgment in making certain adjustments for factors such as size, risk profile or profitability of the comparable businesses, when compared to our CGUs. In addition, for the SASS CGU, we also used a liquidation approach based on the level of research and development expenses incurred over the last two years.

As at August 31, 2019, the recoverable amount for all CGUs exceeded their carrying value.

(e) Purchase price allocation in business combinations

The fair value of the total consideration transferred in business combinations (purchase price) must be allocated based on the estimated fair value of acquired net assets at the date of acquisition. Allocating the purchase price requires management to make estimates and judgments to determine assets acquired and liabilities assumed, useful lives of certain long-lived assets and the respective fair value of assets acquired, and liabilities assumed; this may require the use of unobservable inputs, including management's expectations of future revenue growth, operating costs and profit margins as well as discount rates.

i) Growth rates

The assumptions used are based on acquired companies' historical growth, expectations of future revenue growth, expected synergies as well as industry and market trends.

ii) Discount rate

We use a discount rate to calculate the present value of estimated future cash flows, which represents our weighted average cost of capital (WACC).

(f) Identification of performance obligations

Customer contracts may include promises to transfer multiple products and services to a customer. Determining whether the products and services are considered distinct performance obligations that should be accounted for separately or as one single performance obligation may require significant judgment. We assess whether each promised good or service is distinct for the purpose of identifying the various performance obligations in each contract. Promised goods and services are considered distinct provided that: (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer; and (ii) our promise to transfer the good or service to the customer is separately identifiable or distinct from other promises in the contract.

NEW IFRS PRONOUNCEMENTS

IFRS Pronouncements Adopted in Fiscal 2019

Financial instruments

The final version of IFRS 9, "*Financial Instruments*", was issued in July 2014 and replaces IAS 39, "*Financial Instruments: Recognition and Measurement*". IFRS 9 uses a single approach to determine whether a financial asset is measured at amortized cost or fair value, replacing the multiple rules in IAS 39. The approach in IFRS 9 is based on how an entity manages its financial instruments in the context of its business model and the contractual cash flow characteristics of its financial assets. Most of the requirements in IAS 39 for classification and measurement of financial liabilities were carried forward unchanged to IFRS 9. The new standard also requires a single impairment method to be used, replacing the multiple impairment methods in IAS 39. Requirements relating to hedge accounting, representing a new hedge accounting model, have also been added to IFRS 9. The new standard is effective for annual periods beginning on or after January 1, 2018 and must be applied retrospectively. We adopted this new standard on September 1, 2018 using the modified retrospective method. The following table summarizes the impact of its adoption on our consolidated balance sheet as at September 1, 2018, in thousands of US dollars:

	As reported as at August 31, 2018	Adjustments	As adjusted as at September 1, 2018
Accounts receivables – Trade	$ 47,273	$ (303)	$ 46,970
Income taxes and tax credits recoverable	$ 4,790	$ 50	$ 4,840
Total assets	$ 284,544	$ (253)	$ 284,291
Retained earnings	$ 114,906	$ (253)	$ 114,653
Shareholders' equity	$ 177,921	$ (253)	$ 177,668

In addition, our financial instruments are accounted for as follows under IFRS 9 as compared to our previous accounting policy with IAS 39:

Financial assets	*Classification – IAS 39*	*Classification – IFRS 9*
Cash	Loans and receivables	Amortized cost
Short-term investments	Available for sale	Fair value through other comprehensive income
Accounts receivable	Loans and receivables	Amortized cost
Forward exchange contracts	Derivatives used for hedging	Fair value through other comprehensive income

Financial liabilities	*Classification – IAS 39*	*Classification – IFRS 9*
Bank loan	Other financial liabilities	Amortized cost
Accounts payable and accrued liabilities	Other financial liabilities	Amortized cost
Other liabilities	Other financial liabilities	Amortized cost
Long-term debt	Other financial liabilities	Amortized cost
Forward exchange contracts	Derivatives used for hedging	Fair value through other comprehensive income

Hedge accounting

All existing hedge relationships that were designated as effective hedging relationships under IAS 39, continue to qualify for hedge accounting under IFRS 9. IFRS 9 does not change the general principles of how we account for effective hedges.

Revenue from contracts with customers

IFRS 15, "*Revenue from Contracts with Customers*", was issued in May 2014. The objective of this new standard is to provide a single, comprehensive revenue recognition model for all contracts with customers to improve comparability. This new standard contains principles that an entity must apply to determine the measurement of revenue and timing of when it is recognized. The underlying principle is that an entity recognizes revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. This new standard is effective for annual periods beginning on or after January 1, 2018. We adopted this new standard on September 1, 2018 using the modified retrospective method. We applied this standard retrospectively only to contracts that are not completed at the date of initial application.

We concluded that the main areas of impact relate to the allocation of the transaction price to the various performance obligations under the contracts, the timing of revenue recognition for sales arrangements that contain customer acceptance clauses, and the sale of licenses that provide customers with the "right to use" our intellectual property. The adoption of the new standard had no material impact on our consolidated financial statements.

Foreign currency transactions and advance consideration

IFRIC 22, "*Foreign Currency Transactions and Advance Consideration*", was issued in December 2016. IFRIC 22 addresses how to determine the date of the transaction for the purpose of determining the exchange rate to use on initial recognition of the related asset, expense or income (or part of it) and on the derecognition of a non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration in a foreign currency. IFRIC 22 is effective for annual periods beginning on or after January 1, 2018. We adopted this interpretation retrospectively on September 1, 2018 and its adoption did not have a material impact on our consolidated financial statements.

New IFRS pronouncements not yet Adopted

Leases

IFRS 16, "*Leases*", was issued in January 2016. IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract, i.e., the customer (lessee) and the supplier (lessor). IFRS 16 will supersede IAS 17, "*Leases*", and related interpretations. Under IFRS 16, lessees will recognize a right-of-use asset and a lease liability measured at the present value of lease payments for virtually all of their leases. Short-term leases with a term of 12 months or less are not required to be recognized. This new standard is effective for annual periods beginning on or after January 1, 2019.

We will adopt this new standard on September 1, 2019, using the modified retrospective method, which does not require adjustments to comparative periods. We will apply IFRS 16 at the adoption date and recognize right-of-use assets and lease liabilities in the period of adoption. The new standard provides a number of optional practical expedients in transition. Upon implementation of the new standard, we intend to elect the practical expedients to combine lease and non-lease components, and to not recognize right-of-use assets and lease liabilities for short-term leases. We are in the process of identifying appropriate changes to our accounting policies, information technology systems, business processes, and related internal controls to support recognition and disclosure requirements under IFRS 16. We expect that the adoption of IFRS 16 will increase our assets and liabilities by approximately $11 million, as we will recognize a right-of-use asset and a lease liability for all our long-term leases. However, we do not expect the adoption of this standard to have a significant impact on net earnings. The lease expense, previously recorded under cost of sales, selling and administrative expenses and net research and development expenses line items will be recorded as depreciation expenses for the right-of-use asset and as interest expenses on the lease liability in the consolidated statements of earnings. In addition, lease payments for the right-of-use asset, previously reported in cash flow from operating activities, will be reported in cash flow from financing activities in the consolidated statements of cash flows.

Uncertainty over income tax treatments

IFRIC 23, "*Uncertainty over Income Tax Treatments*", was issued in June 2017. IFRIC 23 provides guidance on how to value uncertain income tax positions based on the probability of whether the relevant tax authorities will accept the company's tax treatments. A company is to assume that a taxation authority with the right to examine any amounts reported to it will examine those amounts and will have full knowledge of all relevant information when doing so. IFRIC 23 is effective for annual periods beginning on or after January 1, 2019. We will adopt this interpretation on September 1, 2019, and we do not expect its adoption to have a material impact on our consolidated financial statements.

RISKS AND UNCERTAINTIES

Over the past several years, we have managed our business in a difficult environment; gradually evolved from a supplier of dedicated test instruments to a supplier of end-to-end solutions, focused on research and development programs for new and innovative solutions aimed at expected growth pockets in our sector; continued the development of our domestic and international markets; and made strategic acquisitions such as the recent acquisitions of EXFO Solutions, EXFO Optics, and Ontology. However, we operate in a highly competitive and complex sector that is in constant evolution, and, as a result, we encounter various risks and uncertainties that must be given appropriate consideration in our strategic management plans and policies.

While strategic acquisitions, like those we made in fiscal 2017 and 2018, and possibly others in the future, are essential to our long-term growth, they also expose us to certain risks and uncertainties related to the rapid and effective integration of these businesses, their products, technologies and personnel as well as key personnel retention. Finally, integration of new acquisitions requires the dedication of management resources, which may draw management's attention away from our day-to-day business and operations.

Our business is subject to the effects of general global and regional economic conditions, particularly conditions in the telecommunications test, service assurance and analytics markets. In the past, our operating results have been adversely affected as a result of unfavorable economic conditions and reduced or delayed capital spending in the Americas, EMEA and APAC. Global and regional economic conditions continue to be volatile and uncertain as reflected by Britain's decision to exit the European Union and by trade actions by the US government. If global and/or regional economic and market conditions, or economic conditions in key markets, remain uncertain or deteriorate, we may experience material adverse impacts on our business. Unfavorable and/or uncertain economic and market conditions may result in lower capital spending or delayed spending by our customers on network test, service assurance and analytics solutions, and, therefore, demand for our products could decline and adversely impact our revenue.

Our functional currency is the Canadian dollar. We are exposed to a currency risk because of our export sales of products manufactured in Canada, China, France and Finland, the majority of which are denominated in US dollars and euros, while a significant portion of our cost of sales and operating expenses are denominated in Canadian dollars and currencies such as the euro, British pound, Indian rupee and CNY (China). As a result, even though we manage our exposure to currency risk to some extent with forward exchange contracts (by selling US dollars for Canadian dollars and US dollars for Indian rupees) and certain cost of sales and operating expenses are denominated in currencies other than the Canadian dollar, namely the US dollar and euro, we are exposed to fluctuations in the exchange rates between the Canadian dollar on one hand and the US dollar, euro and other currencies on the other. Any increase in the value of the Canadian dollar relative to the US dollar and other currencies, or any unfavorable variance between the value of the Canadian dollar and the contractual rates of our US dollar - Canadian dollar forward exchange contracts, could result in foreign exchange losses and have a material adverse effect on our operating results. Foreign exchange rate fluctuations also flow through the consolidated statement of earnings line items as a significant portion of cost of sales and our operating expenses are denominated in Canadian dollars, euros, Indian rupees and CNY, and we report our results in US dollars. Any decrease in the value of the US dollar relative to the Canadian dollar and other currencies could have a material adverse effect on our operating results.

Risks and uncertainties related to the communications test, monitoring and analytics industry involve the rapid and timely development of new products that may have short lifecycles and require extensive research and development; the difficulty of adequately predicting market size, trends and customer needs; the ability to quickly adapt our cost structure to changing market conditions to achieve profitability; and the challenge of retaining highly skilled employees.

Given our strategic goals for growth and competitive positioning in our industry, we are continually expanding into international markets, such as the operation of our manufacturing facilities in China and our software development center in India as well as operating other subsidiaries in many countries. This exposes us to certain risks and uncertainties, namely changes in local laws and regulations, multiple technological standards, protective legislation, inter-company transfer price audits, pricing pressure, cultural differences and the management of operations in different countries.

The economic environment of our industry could also result in some of our customers experiencing difficulties, which, consequently, could have a negative effect on our results, especially in terms of future sales and the recoverability of accounts receivable. However, the sectorial and geographic diversity of our customer base provides us with a reasonable level of protection in this area. Finally, other financial instruments, which potentially subject us to credit risks consist mainly of cash, short-term investments and forward exchange contracts. Our short-term investments consist of debt instruments issued by high-credit-quality corporations. Our cash and forward exchange contracts are held with or issued by high-credit quality-financial institutions; therefore, we consider the risk of non-performance on these instruments to be limited.

We depend on a single supplier or a limited number of suppliers for some of the parts used to manufacture our products for which alternative sources may not be readily available. In addition, all our orders are placed through individual purchase orders, and, therefore, our suppliers may experience difficulties, suffer from natural disasters delays or stop supplying parts to us at any time. The reliance on a single source or limited number of suppliers could result in increased costs, delivery problems and reduced control over product pricing and quality. Any interruption or delay in the supply of any of these parts could significantly harm our ability to meet scheduled product deliveries to our customers and cause us to lose sales. Furthermore, the process of qualifying a new manufacturer for complex parts designed to our specifications, such as our optical, electronic or mechanical parts, is lengthy and would consume a substantial amount of time for our technical personnel and management. If we were required to change a supplier in a short period of time, our business would be disrupted. In addition, we may be unsuccessful in identifying a new supplier capable of meeting and willing to meet our needs on terms that we would find acceptable.

For a more complete understanding of risk factors that may affect us, please refer to the risk factors set forth in our Annual Report, on Form 20-F, published with securities commissions at www.EXFO.com, or at www.sedar.com in Canada or www.sec.gov/edgar.shtml in the U.S.

NON-IFRS MEASURES

We provide non-IFRS measures (gross margin before depreciation and amortization and adjusted EBITDA) as supplemental information regarding our operational performance. Gross margin before depreciation and amortization represents sales, less cost of sales, excluding depreciation and amortization. Adjusted EBITDA represent net earnings (loss) attributable to the parent interest before interest and other expense, income taxes, depreciation and amortization, stock-based compensation costs, restructuring charges, acquisition-related deferred revenue fair value adjustment, change in fair value of cash contingent consideration, and foreign exchange gain or loss.

These non-IFRS measures eliminate the effect on our IFRS results of non-cash statement of earnings elements, restructuring charges as well as elements subject to significant volatility such as foreign exchange gain or loss. We use these measures for evaluating our historical and prospective financial performance, as well as our performance relative to our competitors. These non-IFRS measures are also used by financial analysts that evaluate and compare our performance against that of our competitors and industry players in our sector.

Finally, these measures help us plan and forecast future periods as well as make operational and strategic decisions. We believe that providing this information to our investors, in addition to the IFRS measures, allows them to see the company's results through the eyes of management, and to better understand our historical and future financial performance. More importantly, it enables the comparison of our performance on a relatively similar basis against that of other public and private companies in our industry worldwide.

The presentation of this additional information is not prepared in accordance with IFRS. Therefore, the information may not necessarily be comparable to that of other companies and should be considered as a supplement to, not a substitute for, the corresponding measures calculated in accordance with IFRS.

The following table summarizes the reconciliation of adjusted EBITDA to IFRS net earnings (loss) attributable to the parent interest, in thousands of US dollars:

	Years ended August 31,		
	2019	**2018**	**2017**
IFRS net earnings (loss) attributable to the parent interest for the year	**$ (2,480)**	$ (11,902)	$ 851
Add (deduct):			
Depreciation of property, plant and equipment	**5,469**	5,444	3,902
Amortization of intangible assets	**9,012**	10,327	3,289
Interest and other expense	**718**	1,378	303
Income taxes	**5,346**	5,678	6,608
Stock-based compensation costs	**1,831**	1,748	1,414
Restructuring charges	**3,305**	4,409	5,079
Change in fair value of cash contingent consideration	–	(670)	(383)
Acquisition-related deferred revenue fair value adjustment	**1,435**	2,095	–
Foreign exchange (gain) loss	**949**	(1,309)	978
Adjusted EBITDA for the year (1)	**$ 25,585**	$ 17,198	$ 22,041
Adjusted EBITDA in percentage of total sales	**8.9%**	6.4%	9.1%

(1) Includes acquisition-related costs of $1.1 million and $2.2 million in fiscal 2017 and 2018 respectively (nil in fiscal 2019).

QUARTERLY SUMMARY FINANCIAL INFORMATION (1)
(tabular amounts in thousands of US dollars, except per share data)

	1st quarter	2nd quarter	3rd quarter	4th quarter	Year ended August 31,
2019					
Sales	$ 69,201	$ 73,927	$ 73,587	$ 70,175	$ 286,890
Cost of sales (2)	$ 28,897	$ 29,062	$ 30,458	$ 30,260	$ 118,677
Net earnings (loss)	$ (7,467)	$ 5,193	$ 21	$ (227)	$ (2,480)
Basic and diluted net earnings (loss) (3)	$ (0.14)	$ 0.09	$ 0.00	$ (0.00)	$ (0.04)

	1st quarter	2nd quarter	3rd quarter	4th quarter	Year ended August 31,
2018					
Sales	$ 63,391	$ 64,722	$ 72,217	$ 69,216	$ 269,546
Cost of sales (2)	$ 23,289	$ 25,326	$ 28,963	$ 27,426	$ 105,004
Net earnings (loss) attributable to the parent interest	$ 2,679	$ (4,660)	$ (5,970)	$ (3,951)	$ (11,902)
Basic and diluted net earnings (loss) attributable to the parent interest per share (3)	$ 0.05	$ (0.08)	$ (0.11)	$ (0.07)	$ (0.22)

(1) Quarterly financial information has been derived from our unaudited condensed interim consolidated financial statements, which are prepared in accordance with IFRS, as issued by the IASB, applicable to the preparation of interim financial statements, including IAS 34, "*Interim Financial Reporting*". The presentation currency is the US dollar, which differs from the functional currency of the company (Canadian dollar).
(2) The cost of sales is exclusive of depreciation and amortization.
(3) Per share data is calculated independently for each quarter presented. Therefore, the sum of this quarterly information does not equal the corresponding annual information.

Quarterly Sales Analysis

Overall in fiscal 2019, our sales increased 6.4% to $286.9 million compared to $269.5 million in 2018. Refer to section ''Sales and bookings'' elsewhere in this document for explanations about the year-over-year annual increase in sales. On a quarterly basis, our sales fluctuate from quarter to quarter due to timing and magnitude of orders.

Fourth Quarter Results

Gross margin before depreciation and amortization

In the fourth quarter of fiscal 2019, our gross margin before depreciation and amortization reached 56.9%, 3.5% lower compared to 60.4% for the same period last year.

In the fourth quarter of fiscal 2018, gross margin before depreciation and amortization included $0.5 million, or 0.7% of sales, in restructuring charges for severance expenses, compared to nil in the same period this year.

Excluding restructuring charges, gross margin before depreciation and amortization would have amounted to 61.1% of sales in the fourth quarter of fiscal 2018, 4.2% higher compared to 56.9% of sales during the same period this year.

In the fourth quarter of fiscal 2019, our gross margin before depreciation and amortization was unfavorably affected by product mix compared to the same period last year, which reduced our gross margin before depreciation and amortization year-over-year.

In addition, in the fourth quarter of fiscal 2019, we recorded higher inventory writeoffs compared to the same period last year, which decreased our gross margin before depreciation and amortization by 0.5% year-over-year.

Finally, in the fourth quarter of fiscal 2019, we recorded in our sales foreign exchange losses on our forward exchange contracts of $0.2 million, compared to foreign exchange gains of $0.1 million during the same period last year. This gap further reduced our gross margin before depreciation and amortization by 0.2% year-over-year.

Net loss

Net loss amounted to $0.2 million, or $0.00 per share, in the fourth quarter of fiscal 2019 compared to $4.0 million, or $0.07 per share, for the same period last year.

In the fourth quarter of fiscal 2018, we recorded net restructuring charges of $3.4 million compared to nil in the same period this year. Excluding restructuring charges, net loss would have amounted to $0.6 million in the fourth quarter of fiscal 2018, $0.4 million higher compared to $0.2 million in the same period this year.

In the fourth quarter of fiscal 2019, despite inflation and salary increases, we reported lower selling and administrative and net research and development expenses mainly due to the positive impact of our fiscal 2018 restructuring plan and more favorable foreign exchange rates year-over-year.

In addition, we reported lower depreciation and amortization expenses year-over-year mainly because some long-lived assets became fully amortized during fiscal 2019 as well as due to more favorable foreign exchange rates year-over-year.

On the other hand, we reported lower gross margin before depreciation and amortization in dollars compared to the same period last year. In addition, interest and other expenses were higher in the fourth quarter of fiscal 2019 compared to the same period last year as we wrote off some capital assets during the quarter.