QUARTERHILL

Quarterhill Inc.

Management's Discussion and Analysis
For the years ended December 31, 2020 and 2019
March 11, 2021

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INTRODUCTION

This Management's Discussion and Analysis of Quarterhill Inc. (this "MD&A") is dated March 11, 2021. References in this MD&A to "Quarterhill", "we", "us" and "our" refer to Quarterhill Inc. and its consolidated subsidiaries during the periods presented unless the context requires otherwise and references to "Common Shares" in this MD&A refer to common shares in the capital of Quarterhill.

The Common Shares are listed under the symbol "QTRH" on the Toronto Stock Exchange (the "TSX"). On December 3, 2019 we announced that our Board of Directors (our "Board") had approved the delisting of the Common Shares from the Nasdaq Global Select Market and to terminate the registration of the Common Share under the U.S. Securities Exchange Act of 1934, as amended. To continue to support our shareholders in the United States, we listed our Common Shares on the United States OTCQX Best Market (the "OTCQX") under the symbol "QTRHF" which became effective December 23, 2019.

Quarterhill is a Canadian company in the Intelligent Transportation System ("ITS") and Intellectual Property ("IP") industries. Our goal is to pursue an investment strategy that capitalizes on attractive market trends in both ITS and its adjacent markets.

Our business model is to build a consistently profitable company through the acquisition, management and growth of companies in our dedicated technology areas, with an emphasis on seeking out acquisition opportunities that provide a foundation for profitable growth. We will focus on opportunities that have a strategic fit with opportunities for synergies, attractive valuations, recurring revenues, strong gross profits, predictable cash flows, deep customer relationships and dedicated management teams among other considerations. In appropriate circumstances, we may also divest certain assets if favourable conditions for such a divestiture are presented.

This MD&A provides information for the three and twelve month periods ended December 31, 2020 and up to and including March 10, 2021. This MD&A should be read in conjunction with Quarterhill's consolidated financial statements and the notes thereto for the year ended December 31, 2020 and December 31, 2019, which have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB").

Unless otherwise indicated, all financial information in this MD&A is reported in thousands of Canadian dollars, except for share and earnings per share data which is reported in number of shares and Canadian dollars respectively. The tables and charts included in this document form an integral part of this MD&A.

Up until December 31, 2019, we prepared our consolidated financial statements in accordance with U.S. Generally Accepted Accounting Principles and in U.S. dollars. Since the current year's consolidated financial statements represent our first presentation of our results and financial position under IFRS, they were prepared in accordance with International Accounting Standards ("IAS") 1, "Presentation of Financial Statements" and IFRS 1, "First-Time Adoption of IFRS." Subject to certain transition elections, we have consistently applied the same accounting policies in our opening IFRS statement of financial position at January 1, 2019, and throughout all periods presented as if these policies had always been in effect.

This MD&A has been prepared with reference to National Instrument 51-102 - Continuous Disclosure Obligations of the Canadian Securities Administrators. Additional information filed by us with the Canadian Securities Administrators, including quarterly reports, annual reports and our Annual Information Form for the year ended December 31, 2019 (our "AIF"), is available on-line at www.sedar.com and also on our website at www.Quarterhill.com.

Our management is responsible for establishing appropriate information systems, procedures and controls to ensure that all financial information disclosed externally, including in this MD&A, and used internally by us, is complete and reliable. These procedures include the review and approval of our financial statements and associated information, including this MD&A, first by our management's Disclosure Committee, then by our Board's Audit Committee (the "Audit Committee") and, finally, by our Board as a whole.

YEAR ENDED 2020 BUSINESS HIGHLIGHTS

Strong Performance from Both Business Units

Our Intelligent Transportation Systems ("ITS") business segment, International Road Dynamics ("IRD"), enjoyed strong results in 2020. IRD's revenues for the three months and year ended December 31, 2020 of $17,618 and $66,266, respectively, were both among the highest in its history. As a result, IRD's Adjusted EBITDA for the three months and year ended December 31, 2020, were $3,648 and $13,823, respectively, as compared to $3,102 and $8,278 in the respective prior year periods.

IRD also announced several new contracts signed during 2020 further adding to its order backlog. IRD received a contract for the design, supply, installation, service, and integration of two Weigh-in-Motion ("WIM") systems in the Republic of Paraguay. IRD was also awarded contracts to provide services for five WIM systems located in New York State, commercial vehicle enforcement systems in Ukraine, WIM Systems with the U.S. Federal Highway Administration Office, and Virtual Weigh Station systems with the Oklahoma Department of Transportation.

WiLAN's solid performance in 2020 resulted from the execution of several new patent license agreements during the year with United Microelectronics Corporation, Kingston Technology Corporation, Konica Minolta, Inc. and Intel Corporation. WiLAN also acquired additional patent portfolios from International Business Machines Corporation ("IBM") and MediaTek Inc. related to technologies in semiconductor manufacturing process, power management, embedded and NFC microcontrollers, as well as image processors.

We were also pleased to report that during 2020, WiLAN won a jury verdict for final judgment in favor of WiLAN related to patent infringement against Apple. The total award in the final judgment stands at US $108.98 million, including interest up to the date of the final judgment, and WiLAN is entitled to post-judgment interest from June 16, 2020 until the date that the final judgment is satisfied. Finally, as indicated in the court's final judgment, there are additional royalties for products which Apple released during the pendency of the litigation that will be accounted for separately.

Please refer to the Segmented Results section of this MD&A for further details of the three months and year ended December 31, 2020 financial performance of IRD and WiLAN.

New Executive Appointments

We were pleased to make several executive appointments during 2020. Effective June 1, 2020, Paul Hill was appointed Chief Executive Officer. Mr. Hill is an executive with extensive experience in managing technology and diversified software companies and in completing acquisitions of technology companies. Also, on June 1, 2020, as part of planned succession, Rish Malholtra was appointed President and Chief Executive Officer of IRD. Rish Malhotra is a Professional Engineer (P.Eng.) and also holds an MBA in Technology and International Business Management. Rish has been with IRD for the past 12 years progressing through various roles including Vice President, International Business and most recently as the Executive VP and COO.

On August 31, 2020 we announced the appointment of Mr. John Rim as Chief Financial Officer of Quarterhill, effective October 1, 2020. Mr. Rim is an executive with 25 years' experience in varied finance and leadership roles across multiple industries, including the technology sector. Mr. Rim is responsible for all aspects of financial planning and reporting, treasury, financing, internal controls, governance, and capital markets and will play a key role in the execution of Quarterhill's strategic plans.

Return of Capital

In July 2020, we completed a Substantial Issuer Bid ("SIB") resulting in the repurchase for cancellation of 2,687,981 Common Shares at an average purchase price of $2.15 per share, plus transaction costs of $0.5 million, for a total of $6.3 million. In addition, pursuant to a Normal Course Issuer Bid ("NCIB") approved by the Toronto Stock Exchange, we repurchased 2,206,636 Common Shares at an average price of $1.95 per share totaling $4.3 million as at December 31, 2020. In total, the Company repurchased 4,894,617 Common Shares for $10.6 million under both SIB and NCIB as at the end of 2020. See further details in Capital and Liquidity section below.

Sale of VIZIYA

In May 2020, we completed the sale of VIZIYA Corporation for cash proceeds of $49.4 million to Prometheus Group, based in Raleigh, North Carolina.

Originally acquired by Quarterhill in May 2017, VIZIYA is a software and services provider that helps companies optimize their asset performance and uptime. The sale of VIZIYA served to further strengthen our balance sheet providing capital to fund our growth and return some capital to shareholders. The sale of VIZIYA delivered a strong internal rate of return on our initial investment in VIZIYA.

COVID - 19 Pandemic Update

As the COVID-19 Pandemic continues to affect the global economy, we have continued to take active steps in each of our business segments to protect our employees and business operations as further described below.

Protecting our Employees, Customers, and Communities
The health and safety of our stakeholders remains critical to Quarterhill. During the past year, we have continued to employ proactive measures such as providing for work from home, eliminating travel and closely following the guidelines issued by applicable health and regulatory authorities. During this time, our human resource policies have evolved to respond to questions or concerns from our employees while continuing to explore opportunities to return to an “in office” work environment.

Operations
To date, our portfolio companies remain in full operation, and continue to execute on the delivery of existing customer mandates, while also working to build and sustain business pipelines and advance new opportunities through their respective sales cycles. As expected, the enhanced precautions being taken, and the broader dynamic of the current business environment, has resulted in some delay in the delivery of certain ongoing services, but fundamentally, the operating prospects for all portfolio companies remain sound and are backed by Quarterhill's strong balance sheet.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This MD&A contains forward-looking statements and forward-looking information within the meaning of Canadian securities laws, including such statements relating to:

- assumptions and expectations described in our critical accounting policies and estimates;
- our expectation regarding the adoption and impact of certain accounting pronouncements;
- our expectation regarding the growth rates of our subsidiaries’ businesses;
- our estimates regarding our effective tax rate;
- our expectations regarding ability to acquire additional businesses to further our growth; and
- our expectations with respect to the sufficiency of our financial resources.

The words “expect”, “anticipate”, “estimate”, “may”, “will”, “should”, “would”, “intend”, “believe”, “plan”, “continue”, “project”, the negatives of these words or other variations on these words, comparable terms and similar expressions are intended to identify forward-looking statements and forward-looking information. Forward-looking statements and forward-looking information are based on estimates and assumptions made by us in light of our experience and our perception of historical trends, current conditions and expected future developments, as well as other factors that we believe are appropriate in the circumstances.

We provide forward-looking statements and forward-looking information to assist external stakeholders in understanding our management’s expectations and plans relating to the future as of the date of this MD&A and such statements and information may not be appropriate for any other purposes. The forward-looking statements and forward-looking information in this MD&A are made as of the date of this MD&A only. We have no intention and undertake no obligation to update or revise any forward-looking statements or forward-looking information, whether as a result of new information, future events or otherwise, except as required by law.

CAUTIONARY NOTE REGARDING USE OF NON-IFRS MEASURES

Quarterhill has historically used a set of metrics when evaluating our operational and financial performance. We continually monitor, evaluate and update these metrics as required to ensure they provide information considered most useful, in the opinion of our management, to any decision-making based on Quarterhill's performance. This section defines, quantifies and analyzes the key performance indicators used by our management and referred to elsewhere in this MD&A, which are not recognized under IFRS and have no standardized meaning prescribed by IFRS. These indicators and measures are therefore unlikely to be comparable to similar measures presented by other issuers.

In this MD&A, we use the non-IFRS term "Adjusted EBITDA" to mean net income (loss) from continuing operations adjusted for: (i) income taxes; (ii) finance expense or income; (iii) amortization and impairment of intangibles; (iv) special charges and other one-time items; (v) depreciation of right-of-use assets and property, plant and equipment; (vi) stock-based compensation; (vii) foreign exchange (gain) loss; and (viii) equity in earnings and dividends from joint ventures. Adjusted EBITDA is used by our management to assess our normalized cash generated on a consolidated basis and in our operating segments. Adjusted EBITDA is also a performance measure that may be used by investors to analyze the cash generated by Quarterhill and our operating segments. Adjusted EBITDA should not be interpreted as an alternative to net income and cash flows from operations as determined in accordance with IFRS or as a measure of liquidity.

DESCRIPTION OF OUR BUSINESS

Quarterhill is a disciplined acquirer and manager of established technology companies operating alongside our existing patent monetization business. Our goal is to pursue an investment strategy that capitalizes on attractive market trends in the ITS industry and its adjacent markets. Additionally, in appropriate circumstances, we may also divest certain assets if favourable conditions for such a divestiture are presented.

Strategy
We are focusing our business on the acquisition, management and growth of companies in the ITS industry and its adjacent markets, with an emphasis on seeking out acquisition opportunities that provide a foundation for profitable growth and that have reasonable valuations, recurring revenues, predictable cash flows and gross profit, intimate customer relationships and dedicated management teams among other material considerations.

We believe that if we increase the share of our revenue derived from sources such as annual maintenance and long term contracts, we will also increase our cash flows and predictability of our revenues. This will allow us to better scale our operations to ensure we meet our strategic mandate of operating profitably regardless of the prevailing economic market conditions as we grow both organically and through acquisitions.

Our existing businesses are fully described in more detail in our AIF. As a result of the disposition of VIZIYA, which was the only investment in our Enterprise Software segment, we now operate in two business segments providing technology licensing and ITS as we currently review our operating results, assess our performance, make decisions about resources and generate discrete financial information for each of these segments. We have called these segments Licensing and Intelligent Transportation Systems.

Licensing Segment
Our Licensing segment focuses on technology licensing as its principal business activity. We have an investment in WiLAN, a leading patent licensing company, based in Ottawa, Canada with offices in California and Texas. WiLAN has developed and patented inventions that have proven of great value to third-parties and has a history of acquiring patents that it believes hold great value from other inventors.

Both directly and through its wholly owned subsidiaries, WiLAN partners with its customers and other third parties to unlock the value of intellectual property through various patent monetization models. WiLAN's partnership model with large, global industry leaders allows WiLAN to maintain and grow its pipeline of valuable patent portfolios with no up-front costs while its contingency fee arrangement with legal partners allows WiLAN to predictably manage its costs.

WiLAN operates in a variety of markets including automotive, digital television, Internet, medical, semiconductor and wireless communications technologies. WiLAN's patent licensing agreements generally take into consideration license rights and releases for past infringement. Related payments may be lump-sum, fixed-price with set payments made over a specified duration or running royalty-based depending on a price per-unit and/or a percentage of product sales or service revenues enjoyed by licensees.

WiLAN's proven track record, business and technical expertise, as well as its strong reputation in the IP licensing industry has allowed it to continue to be successful. WiLAN continues to access valuable patent portfolios through strategic partnerships with some of the world's largest companies seeking to monetize and protect their patents.

Intelligent Transportation Systems Segment

Our Intelligent Transportation Systems segment includes companies providing systems and services focused on the interconnection of devices for mobile applications. Our first investment in this segment is IRD. Headquartered in Saskatoon, Canada, IRD is one of the world's leading providers of integrated systems and solutions for the global ITS industry. The ITS industry is focused on improving the safety, increasing efficiency and reducing the environmental impact of highway and roadway transportation systems. IRD has a network of direct and independent operations and relationships in strategic geographic regions to identify and pursue ITS opportunities around the world.

IRD's core strengths are its national and international sales networks and installed base of systems, its intellectual property (trade names, patents, trademarks and other proprietary knowledge) and its ability to utilize a variety of patented and proprietary and original equipment manufacturer technologies, including IRD's proprietary "Weigh-In-Motion" and vehicle measurement technologies, to detect, classify and weigh vehicles at highway speeds. IRD delivers automated systems for commercial vehicle operations at truck weigh stations, border crossings, highway traffic data collection and highway toll collection systems.

IRD's customers include government transportation agencies, traffic engineering consultants and operators, city and municipal agencies, concessionaires and industrial, mining and transportation service companies worldwide.

IRD's revenue is derived from selling ITS services, systems and products. IRD's systems are made up of a combination of proprietary electronics, software technology, "Weigh-In-Motion" and vehicle measurement products and installation and commissioning services. Service contracts are typically multi-year, renewable arrangements for IRD to maintain and service its installed systems and products for its customers. In addition, IRD enters into recurring revenue service contracts under which they own the equipment providing customer services such as delivery of real time and statistical traffic information and truck weigh station bypass services.

BUSINESS COMBINATIONS

As a result of the impact of COVID-19 on the global economy, the underlying uncertainty concerning valuations, the importance of preserving cash and vacancies in some key corporate executive positions in the past twelve months, we had temporarily paused our M&A strategy to focus on our existing businesses. Throughout this period, however, we maintained our M&A ecosystem, to build a growing pipeline of opportunities.

On January 5, 2021, we acquired all of the issued and outstanding shares of Sensor Line GmbH ("Sensor Line"), a German-based ITS provider of fiber optic traffic sensors for road and rail markets for cash consideration of €3.8 million (approximately $6.0 million). Sensor Line will be integrated into Quarterhill's wholly owned subsidiary, IRD. Please refer to Note 26 - Subsequent Events of the notes to the consolidated financial statements for more information on the acquisition of Sensor Line.

We remain focused on building robust cash flows and controlling expenses throughout all our businesses to maintain a healthy and sustainable balance sheet capable of supporting both our organic and acquisitive growth opportunities. With our management team now fully in place, a strong balance sheet, and the strength and progress in our portfolio companies, we are well positioned to execute our M&A growth strategy and we are actively pursuing targets in the ITS industry that are synergistic and accretive to Quarterhill.

OVERALL PERFORMANCE

Consolidated Statements of Income
(in thousands of Canadian dollars, except share and per share amounts)

	Three months ended December 31,	
	2020	2019
Revenues		
Licensing	**$ 474**	$ 30,591
Intelligent Transportation Systems	**17,618**	17,708
	18,092	48,299
Direct cost of revenues		
Licensing	**5,338**	11,398
Intelligent Transportation Systems	**11,091**	10,539
	16,429	21,937
Gross profit	**1,663**	26,362
Operating expenses		
Depreciation of right-of-use assets	**241**	249
Depreciation of property, plant and equipment	**248**	210
Amortization of intangibles	**4,539**	5,617
Selling, general and administrative expenses	**8,323**	7,491
Research and development expenses	**468**	645
Impairment losses on intangibles	**—**	115
Special charges	**355**	1,046
	14,174	15,373
Results from operations	**(12,511)**	10,989
Finance income	**(45)**	(508)
Finance expense	**92**	131
Foreign exchange loss	**425**	169
Other income	**(488)**	(373)
(Loss) income before taxes	**(12,495)**	11,570
Current income tax expense	**368**	2,320
Deferred income tax (recovery) expense	**(2,662)**	611
Income tax (recovery) expense	**(2,294)**	2,931
Net (loss) income from continuing operations	**(10,201)**	8,639
Net loss from discontinued operations	**—**	(2,266)
Net (loss) income	**$ (10,201)**	$ 6,373
Net (loss) income per share		
From continuing operations	**(0.09)**	0.07
From discontinued operations	**—**	(0.02)
Net (loss) income per share - Basic	**$ (0.09)**	$ 0.05
From continuing operations	**(0.09)**	0.07
From discontinued operations	**—**	(0.02)
Net (loss) income per share - Diluted	**$ (0.09)**	$ 0.05

Consolidated Statements of Income
(in thousands of Canadian dollars, except share and per share amounts)

	Year ended December 31,	
	2020	2019
Revenues		
Licensing	**$ 78,260**	$ 106,052
Intelligent Transportation Systems	**66,266**	66,873
	144,526	172,925
Direct cost of revenues		
Licensing	**46,205**	53,130
Intelligent Transportation Systems	**39,463**	42,887
	85,668	96,017
Gross profit	**58,858**	76,908
Operating expenses		
Depreciation of right-of-use assets	**979**	1,305
Depreciation of property, plant and equipment	**969**	1,296
Amortization of intangibles	**18,855**	23,305
Selling, general and administrative expenses	**26,868**	26,719
Research and development expenses	**2,282**	2,874
Impairment losses on intangibles	**295**	115
Special charges	**1,227**	2,448
	51,475	58,062
Results from operations	**7,383**	18,846
Finance income	**(573)**	(1,665)
Finance expense	**459**	740
Foreign exchange (gain) loss	**(88)**	324
Other income	**(1,680)**	(869)
Income before taxes	**9,265**	20,316
Current income tax expense	**2,037**	8,117
Deferred income tax expense	**2,800**	1,106
Income tax expense	**4,837**	9,223
Net income from continuing operations	**4,428**	11,093
Net income from discontinued operations	**14,255**	1,569
Net income	**$ 18,683**	$ 12,662
Net income per share		
From continuing operations	**0.04**	0.09
From discontinued operations	**0.12**	0.01
Net income per share - Basic	**$ 0.16**	$ 0.10
From continuing operations	**0.04**	0.09
From discontinued operations	**0.12**	0.01
Net income per share - Diluted	**$ 0.16**	$ 0.10

Consolidated revenues for the three months and year ended December 31, 2020 were $18,092 and $144,526 as compared to $48,299 and $172,925 in the comparative prior period. The decrease in the current year primarily relates to our Licensing segment where revenues decreased $27,792 over the prior year comparative period due to limited license activity in Q4 2020.

The components of our revenue are as noted below:

Licensing	Licensing revenues includes all revenues associated with technology licenses, perpetual software licenses and other revenues characterized as one-time licenses.
Intelligent Transportation Systems	Systems revenues includes revenues earned on contracted projects, generally recognized on a percentage completion basis plus proprietary and OEM products sales, which are distributed directly and through a network of distributor/agency relationships. These projects generally result in the delivery of a complete system to the customer.

For the year ended December 31, 2020 Licensing revenues were $78,260 and Intelligent Transportation Systems revenues were $66,266, compared to $106,052 and $66,873, respectively, for the year ended December 31, 2019. The decrease in revenue for the Licensing segment of $27,792 is due to a larger number of significant contracts being closed in the prior year as licensing revenues are one-time in nature. Revenues for the Intelligent Transportation Systems segment for the year ended December 31, 2020 were consistent with the prior year comparative period.

Gross profit, calculated as revenues less direct cost of revenues for the three months and year ended December 31, 2020 was $1,663 or 9% and $58,858 or 41% compared to $26,362 or 55% and $76,908 or 44% for the prior year respective periods. For the current quarter and fiscal year, our licensing segment generated $(4,864) and $32,055 in gross profit compared to $19,193 and $52,922 in the respective comparative prior periods. The decrease in gross profit for the three months and year ended December 31, 2020 as compared to the three months and year ended December 31, 2019 is due to the closure of a number of large licensing contracts in the three months ended December 31, 2019 compared to the current three months ended December 31, 2020 wherein WiLAN did not finalize any significant contracts. Our intelligent transportation systems segment generated $6,527 and $26,803 in gross margin compared to $7,169 and $23,986 in the respective comparative prior periods.

Direct cost of revenues includes: (i) for our Licensing segment, patent licensing expenses which include royalty obligations, cost of patents if purchased from brokers, employee costs, costs incurred in conducting license negotiations, contingent partner and legal fee payments and other licensing and litigation expenses as well as all costs associated with the ownership, maintenance and management of the related patents; and (ii) for our Intelligent Transportation Systems segment, all costs of delivering on a project including employee costs, inventory consumption costs, subcontractor costs and costs related to any maintenance and warranty work completed.

Consolidated operating expenses are comprised of depreciation, amortization of intangible assets, selling, general and administrative costs, research and development costs, impairment losses on intangibles, and special charges. Total operating expenses for the three months and year ended December 31, 2020 were $14,174 and $51,475 as compared to $15,373 and $58,062 in the respective comparative prior periods. The lower operating costs in the year ended December 31, 2020 were primarily driven by a decrease in amortization of intangibles, and depreciation of right-of-use assets, depreciation of property, plant, and equipment, and a reduction of research and development

Selling, general and administrative costs are primarily comprised of management, sales and administrative personnel costs, sales and marketing expenses, occupancy costs, and professional advisory and regulatory fees. Research and development ("R&D") costs are primarily composed of salary and materials costs associated with our various R&D activities, net of government grants and investment tax credits. Selling, general and administrative and research and development expenses for the three months and year ended December 31, 2020 totaled $8,791 and $29,150 as compared to $8,136 and $29,593 for the respective comparative prior periods.

Special charges include costs and recoveries that relate to certain restructuring initiatives undertaken from time to time, acquisition-related costs and recoveries and other charges. Special charges for the three months and year ended December 31, 2020 were $355 and $1,227 as compared to of $1,046 and $2,448 for the respective comparative prior periods.

During Q2 2020 we completed the disposition of VIZIYA Corp. ("VIZIYA"), a portfolio company in Quarterhill's previously reported Enterprise Software segment, for total cash proceeds of $49.4 million, resulting in a pre-tax gain on disposition of $17,713 less applicable deferred taxes of $1,559, plus the net loss from this segment's operations of $1,800 up to the date of sale on May 15, 2020. Net income from discontinued operations for the year ended December 31, 2019 was $1,570.

Reconciliation of Net Income to Adjusted EBITDA

We consider Adjusted EBITDA, a non-IFRS measure, to be a good indicator for the business to capture financial performance in a given period related to the operations of Quarterhill and each of our reporting segments.

We reported Adjusted EBITDA of $(6,080) and $31,200 for the three months and year ended December 31, 2020 compared to $18,687 and $48,520 for the respective comparative prior periods. The reduction in EBITDA for the three months and year ended December 31, 2020 as compared to the respective prior year periods are due to the changes in revenue and expenses as previously explained. With the creation of Quarterhill and the adoption of a growth oriented strategy anchored in acquisitions of technology businesses in 2017, we began tracking expenses related to the acquisitions. Special charges generally consist of advisor fees, accounting and valuation fees, due diligence related expenses and legal fees, restructuring charges, and other one-time items. Although these expenses may recur as we complete additional acquisitions, they are not fundamental to the actual operations of our businesses and, therefore, have been excluded in the calculation of Adjusted EBITDA. The remaining adjustments we have made relate to finance income or expense, depreciation and amortization, impairment loss on intangibles, stock-based compensation, equity earnings and dividends from joint venture, other acquisition related accounting items and other one-time charges.

From time to time, we acquire businesses in purchase transactions that typically result in the recognition of goodwill and other identifiable intangible assets. Acquired goodwill is not amortized but is subject to impairment testing at least annually and as other events and circumstances dictate. Other identifiable intangible assets are typically subject to amortization and, therefore, will likely increase future expenses. The determination of the value of such intangible assets requires us to make estimates and assumptions. We have ascribed value to identifiable intangible assets other than goodwill in our purchase price allocations including, but not limited to, backlog, brand and customer and technology related intangible assets. To the extent we ascribe value to identifiable intangible assets that have finite lives, we amortize those values over the estimated useful lives of the assets. We amortize customer related intangible assets over a period of seven years and developed software related intangible assets over five years.

Reconciliations of Net income to Adjusted EBITDA

(in thousands of Canadian dollars, except share and per share amounts)

	Three months ended December 31,			
	2020		2019	
	$	**Per Share**	$	Per Share
Net (loss) income from continuing operations	**$ (10,201)**	**$ (0.09)**	$ 8,639	$ 0.07
Adjusted for:				
Income tax (recovery) expense	**(2,294)**	**(0.02)**	2,931	0.02
Foreign exchange loss	**425**	**—**	169	—
Finance expense (income), net	**47**	**—**	(377)	—
Special charges	**355**	**—**	1,046	0.01
Impairment losses on intangible assets	**—**	**—**	115	—
Depreciation and amortization	**5,028**	**0.05**	6,076	0.05
Stock based compensation expense	**571**	**0.01**	(52)	—
Dividend from joint venture	**477**	**—**	513	—
Other income	**(488)**	**—**	(373)	—
Adjusted EBITDA	**$ (6,080)**	**$ (0.05)**	$ 18,687	$ 0.16
Weighted average number of Common Shares				
Basic		**114,137,754**		118,817,466

	Year ended December 31,			
	2020		2019	
	$	**Per Share**	$	Per Share
Net income from continuing operations	**$ 4,428**	**$ 0.04**	$ 11,093	$ 0.09
Adjusted for:				
Income tax expense	**4,837**	**0.04**	9,223	0.08
Foreign exchange (gain) loss	**(88)**	**—**	324	—
Finance income, net	**(114)**	**—**	(925)	—
Special charges	**1,227**	**0.01**	2,448	0.02
Impairment losses on intangible assets	**295**	**—**	115	—
Depreciation and amortization	**20,803**	**—**	25,906	0.22
Stock based compensation expense	**1,015**	**—**	692	0.01
Dividend from joint venture	**477**	**—**	513	—
Other income	**(1,680)**	**(0.01)**	(869)	(0.01)
Adjusted EBITDA	**$ 31,200**	**$ 0.27**	$ 48,520	$ 0.41
Weighted average number of Common Shares				
Basic		**116,939,833**		118,817,466

SEGMENTED RESULTS

Segmented results of operations for the three months ended December 31, 2020 and 2019 are included in this MD&A. Following the disposition of VIZIYA in the quarter ended June 30, 2020, Quarterhill now operates in two distinct segments.

	For the three months ended December 31, 2020			
CONTINUING OPERATIONS	**Licensing**	**Intelligent Transportation Systems**	**Corporate**	**Total**
Revenues	$ 474	$ 17,618	$ —	$ 18,092
Direct cost of revenues	5,338	11,091	—	16,429
Gross profit	(4,864)	6,527	—	1,663
Depreciation and amortization	3,345	1,628	55	5,028
Selling, general and administrative expenses	800	2,969	4,554	8,323
Research and development expenses	—	468	—	468
Special charges	—	224	131	355
Results from operations	(9,009)	1,238	(4,740)	(12,511)
Finance expense (income), net	1	55	(9)	47
Foreign exchange (gain) loss	(669)	651	443	425
Other income	—	(488)	—	(488)
(Loss) Income before taxes	(8,341)	1,020	(5,174)	(12,495)
Income tax (recovery) expense	(3,204)	1,134	(224)	(2,294)
Net loss from continuing operations	**$ (5,137)**	**$ (114)**	**$ (4,950)**	**$ (10,201)**

	For the year ended December 31, 2020			
CONTINUING OPERATIONS	**Licensing**	**Intelligent Transportation Systems**	**Corporate**	**Total**
Revenues	$ 78,260	$ 66,266	$ —	$ 144,526
Direct cost of revenues	46,205	39,463	—	85,668
Gross profit	32,055	26,803	—	58,858
Depreciation and amortization	14,082	6,605	116	20,803
Selling, general and administrative expenses	3,386	11,393	12,089	26,868
Research and development expenses	—	2,282	—	2,282
Impairment losses of intangible assets	295	—	—	295
Special charges	—	883	344	1,227
Results from operations	14,292	5,640	(12,549)	7,383
Finance (income) expense, net	(61)	283	(336)	(114)
Foreign exchange loss (gain)	647	27	(762)	(88)
Other income	—	(1,680)	—	(1,680)
Income (loss) before taxes	13,706	7,010	(11,451)	9,265
Income tax expense	(325)	1,864	3,298	4,837
Net income (loss) from continuing operations	**$ 14,031**	**$ 5,146**	**$ (14,749)**	**$ 4,428**

CONTINUING OPERATIONS	For the three months ended December 31, 2019 Licensing	Intelligent Transportation Systems	Corporate	Total
Revenues	$ 30,591	$ 17,708	$ —	$ 48,299
Direct cost of revenues	11,398	10,539	—	21,937
Gross profit	19,193	7,169	—	26,362
Depreciation and amortization	4,431	1,625	20	6,076
Selling, general and administrative expenses	1,307	3,961	2,223	7,491
Research and development expenses	—	645	—	645
Impairment losses on intangibles	115	—	—	115
Special charges	20	509	517	1,046
Results from operations	13,320	429	(2,760)	10,989
Finance (income) expense, net	(136)	98	(339)	(377)
Foreign exchange (gain) loss	(628)	239	558	169
Other expense (income)	8	(381)	—	(373)
Income (loss) before taxes	14,076	473	(2,979)	11,570
Income tax expense (recovery)	2,906	(158)	183	2,931
Net income (loss) from continuing operations	**$ 11,170**	**$ 631**	**$ (3,162)**	**$ 8,639**

CONTINUING OPERATIONS	For the year ended December 31, 2019 Licensing	Intelligent Transportation Systems	Corporate	Total
Revenues	$ 106,052	$ 66,873	$ —	$ 172,925
Direct cost of revenues	53,130	42,887	—	96,017
Gross profit	52,922	23,986	—	76,908
Depreciation and amortization	18,932	6,894	80	25,906
Selling, general and administrative expenses	2,849	13,477	10,393	26,719
Research and development expenses	—	2,874	—	2,874
Impairment losses on intangibles	115	—	—	115
Special charges	2,464	509	(525)	2,448
Results from operations	28,562	232	(9,948)	18,846
Finance (income) expense, net	(364)	634	(1,195)	(925)
Foreign exchange (gain) loss	(968)	276	1,016	324
Other expense (income)	4	(873)	—	(869)
Income (loss) before taxes	29,890	195	(9,769)	20,316
Income tax expense (recovery)	10,558	(1,171)	(164)	9,223
Net income (loss) from continuing operations	**$ 19,332**	**$ 1,366**	**$ (9,605)**	**$ 11,093**

Licensing Segment

Our Licensing segment presently is comprised of the operations of WiLAN.

	For the three months ended December 31,		For the Twelve months ended December 31,	
	2020	2019	**2020**	2019
Revenues	**$ 474**	$ 30,591	**$ 78,260**	$ 106,052
Direct cost of revenues	**5,338**	11,398	**46,205**	53,130
Gross profit	**(4,864)**	19,193	**32,055**	52,922
Depreciation and amortization	**3,345**	4,431	**14,082**	18,932
Selling, general and administrative expenses	**800**	1,307	**3,386**	2,849
Impairment losses of intangible assets	**—**	115	**295**	115
Special charges	**—**	20	**—**	2,464
Results from operations	**(9,009)**	13,320	**14,292**	28,562
Finance expense (income), net	**1**	(136)	**(61)**	(364)
Foreign exchange (gain) loss	**(669)**	(628)	**647**	(968)
Other expense	**—**	8	**—**	4
(Loss) income before taxes	**(8,341)**	14,076	**13,706**	29,890
Income tax (recovery) expense	**(3,204)**	2,906	**(325)**	10,558
Net (loss) income from continuing operations	**$ (5,137)**	$ 11,170	**$ 14,031**	$ 19,332
Adjusted EBITDA	**$ (5,588)**	$ 17,899	**$ 28,837**	$ 50,085
Other reconciling items:				
Stock-based compensation	**$ 76**	$ 13	**$ 246**	$ 12

For the three months and year ended December 31, 2020, revenues were $474 and $78,260 as compared to $30,591 and $106,052 in the respective comparative prior year periods. The decline in revenues for the current quarter and year to date is largely due to the one-time nature of WiLAN's licenses. Accordingly, significant fluctuations in revenue, gross profit, and Adjusted EBITDA will result when volume or dollar value of licenses change from one period to the next. The decrease in revenues in the current quarter is directly related to the closure of a number of large licensing contracts in the comparative prior year period in contrast to the current period wherein WiLAN did not finalize any significant contracts. The decrease in revenues for the year ended December 31, 2020 in comparison to the prior year ended December 31, 2019 is due to a larger number of significant contracts being closed in the prior year. With the onset of the COVID-19 Pandemic, WiLAN experienced some delay in completing business, particularly in the second quarter of the year ended December 31, 2020, as a function of travel constraints, changes in court schedules, and licensee access which ultimately had some impact on the revenues for the year ended December 31, 2020 as a whole. WiLAN's patent portfolio assets continue to retain their value.

Patent licenses are considered a promise to provide the right to use intellectual property ("IP") and revenue is recognized when the patent right is effective. An exception to this guidance is related to revenue generated from sales or usage-based royalties promised in exchange for an intellectual property license. Customers generally report their royalty obligations one quarter in arrears and accordingly, we will estimate the expected royalties to be reported for a particular accounting period, with a true up to the actual royalties reported in the following financial reporting period.

Direct cost of revenues for the three months and year ended December 31, 2020 were $5,338 and $46,205 as compared to $11,398 and $53,130 for the respective comparative prior year periods. The variability in direct cost of revenues on the quarter is principally a result of a large decrease in contingent litigation and contingent partner expenses. The decrease in contingent litigation and contingent partner expenses for the three months ended December 31, 2020 was directly related to large licensing contracts concluded in the fourth quarter of

2019 for which these expenses were incurred. The decrease in direct cost of revenues for the year ended December 31, 2020 in comparison to the year ended December 31, 2019 was primarily related to reduced revenues between the comparative period and their corresponding impact on contingent litigation and contingent partner expenses. Litigation payments will fluctuate from quarter to quarter depending on the specific actions underway at that time.

Operating expenses are generally considered selling, general and administration type expenses and include all overheads for WiLAN operations in addition to depreciation, amortization expense and any loss on disposal or impairment losses. For the three months and year ended December 31, 2019, operating expenses also included special charges related to the segment restructuring activities. For the three months ended December 31, 2020, operating expenses within this segment were $4,145 as compared to $5,873 in the comparative year prior period. This decrease in costs is primarily related to lower amortization of intangibles. For the year ended December 31, 2020, operating expenses within this segment were $17,763 as compared to $24,360 in the comparative year prior period. This decrease in costs is primarily related to lower amortization of intangibles, and a reduction in special charges related to the segment restructuring activities undertaken in the prior year comparative period.

Income tax recovery and expense for the three months and year ended December 31, 2020 were $3,204 and $(325), respectively, compared to expenses of $2,906 and $10,558 in the comparative prior year periods. The change in tax expense is largely due to positive income in the prior year's quarter as compared to the three months ended December 31, 2020 wherein losses were incurred. For the year ended December 31, 2020, income tax expenses decreased from the prior year as a result of decreased revenue. Current income tax expense for all reported periods consists primarily of foreign taxes withheld on payments received from licensees in foreign tax jurisdictions for which there is no treaty relief.

As at December 31, 2020, the deferred tax asset of $18.2 million has not been recognized for all of its U.S. subsidiaries, since management believes it is more likely than not that WiLAN will be unable to utilize these assets to offset future taxes. We expect WiLAN to continue to utilize previously recognized Canadian tax loss carryforwards which will result in deferred income tax expense. Until such time as WiLAN's licensing programs in its U.S. subsidiaries generate sufficient taxable income, we expect to continue to not recognize these deferred tax assets for these U.S. subsidiaries.

Intelligent Transportation Systems Segment

	For the three months ended December 31,		For the Twelve months ended December 31,	
	2020	2019	**2020**	2019
Revenues	**$ 17,618**	$ 17,708	**$ 66,266**	$ 66,873
Direct cost of revenues	**11,091**	10,539	**39,463**	42,887
Gross profit	**6,527**	7,169	**26,803**	23,986
Depreciation and amortization, net	**1,628**	1,625	**6,605**	6,894
Selling, general and administrative expenses	**2,969**	3,961	**11,393**	13,477
Research and development expenses	**468**	645	**2,282**	2,874
Special charges	**224**	509	**883**	509
Results from operations	**1,238**	429	**5,640**	232
Finance expense, net	**55**	98	**283**	634
Foreign exchange loss	**651**	239	**27**	276
Other income	**(488)**	(381)	**(1,680)**	(873)
Income before taxes	**1,020**	473	**7,010**	195
Income tax expense (recovery)	**1,134**	(158)	**1,864**	(1,171)
Net (loss) income from continuing operations	**$ (114)**	$ 631	**$ 5,146**	$ 1,366
Adjusted EBITDA	**$ 3,648**	$ 3,102	**$ 13,823**	$ 8,278
Other reconciling items:				
Stock-based compensation	**$ 81**	$ 26	**$ 144**	$ 131

Our Intelligent Transportation Systems segment consists of IRD's operations, which includes each of IRD's wholly-owned subsidiary businesses. IRD's revenue streams include revenues earned on contracted projects, generally recognized over time, proprietary and OEM products sales, which are distributed directly and through its network of distributor/agency relationships, data solutions services, and service and maintenance contracts. Service and maintenance contracts generally range from one to five year terms and revenues are recognized either over time or on a time and material basis, depending on contract terms. Revenues will routinely vary significantly depending on the timing and nature of projects underway in each reporting period.

Segment revenue for the three months and year ended December 31, 2020 were $17,618 and $66,266 as compared to $17,708 and $66,873 for the respective comparative prior year periods. Revenues were substantially unchanged over the comparative prior year periods as increased revenues in the United States market were largely offset by a reduction in international markets due to the COVID-19 effect which delayed or deferred certain sales opportunities.

IRD's gross profit as a value and as a percentage of revenues are subject to significant variance in each reporting period due to the nature and type of contract and service works currently in process, currency volatility and competitive factors. In addition, seasonal weather effects, primarily in IRD's North American business will generally reduce the value of gross profit because of the effect of fixed capacity expenses which are a component of cost of revenues. For the three months and year ended December 31, 2020, IRD gross margin as a percentage of revenue was 37% and 40% as compared to 40% and 36% for the respective comparative prior year periods. This improvement was the result of $2.1 million CEWS benefits earned in the year and significant margins earned on certain projects worked on during the year.

As noted below in the Risk and Uncertainties section, many countries remain in COVID-19-related restrictions on non-essential business activities. The ITS industry has been less affected than many others as IRD has been deemed "essential" in many of the jurisdictions where they operate allowing the majority of IRD's contract work to continue throughout the year. However, IRD is not immune to the impacts of the COVID-19 Pandemic as it has experienced delay and deferral of certain project opportunities, particularly in international markets due mainly to changes in customer priorities and various work and travel restrictions throughout the year.

Total operating expenses are comprised of selling, general and administrative costs, research and development costs, depreciation, amortization of intangible assets and special charges. Total operating expenses for the three months and year ended December 31, 2020 were $5,289 and $21,163 as compared to $6,740 and $23,754 in the respective comparative prior year periods. The decline in period over period costs, reflects reductions in both selling, general and administrative expenses as well as research and development expenses due to $2.7 million in earned CEWS benefits.

IRD is committed to continual investments in research and development to enhance its current products and advance the availability of new products. For the year ended December 31, 2020, net research and development spending levels were 3% of segment revenue. Current investments reflect the priority of ensuring full development of the Vectorsense sensor and its related applications as well as several other new product developments and enhancements. Total R&D expenses have been offset, in part, by accrued CEWS benefits and other government grant recoveries that have enabled IRD to maintain staffing levels to accelerate its R&D activities in the area of data analytics and new non-intrusive sensor technologies.

IRD is exposed to foreign exchange risk primarily relating to sales revenue, operating and capital expenditures, net assets held in foreign currencies, forward exchange contracts and embedded derivative portions of unearned revenue on certain U.S. dollar denominated sales contracts in its North America, Latin America and Mexico markets. IRD has exposure to the U.S. dollar, Indian rupee, Chilean peso, Mexican peso, Euro and Chinese yuan as more fully described in the Financial Instruments and Other Risks section below.

For the three months and year ended December 31, 2020, IRD recorded foreign exchange losses of $651 and $27 as compared to $239 and $276 for the respective comparative prior year periods. Foreign currency gains and losses reflect the changes in the value of the U.S. dollar relative to the Canadian dollar and Chilean peso, which will increase or decrease the carrying value of U.S. dollar net assets. Foreign exchange translation gains or losses arising on consolidation of IRD's subsidiaries in Chile, Mexico and Belgium and its joint venture in China are recorded as accumulated other comprehensive income, which is a component of shareholders' equity.

Other income is comprised of IRD's share of income in its joint venture, XPCT, of which IRD owns a 50% joint venture interest. XPCT has two business divisions providing products and services to both the ITS Industry and construction equipment manufacturers. For the three months and year ended December 31, 2020, IRD's share of XPCT's income was $488 and $1,680 as compared to $381 and $873 for the respective comparative prior year periods. The improved performance over the prior year periods is primarily due to the continued strong performance in XPCT's construction equipment division.

As at December 31, 2020, deferred tax assets of $2.4 million have not been recognized for its international subsidiaries, since management believes it is more likely than not that IRD will be unable to utilize these assets to offset future taxes. We expect IRD to continue to utilize previously recognized Canadian tax loss carryforwards which will result in deferred income tax expense. Until such time as these IRD subsidiaries generate sufficient taxable income, we expect to continue to not recognize these deferred tax assets for these subsidiaries. IRD's effective tax rate can vary from the Canadian statutory tax rate of approximately 26.5% applied to earnings before income taxes because of different rates of tax on foreign income, XPCT net earnings and foreign currency translation gains or losses on consolidation of foreign subsidiaries. As a result, the consolidated effective tax rate is not representative of income tax rates effective in the jurisdictions in which IRD operates.

As at December 31, 2020, IRD has recorded estimated income taxes payable or receivable in each of the Canada, United States and Chile entities based on statutory rates applicable to those jurisdictions, adjusted for non-taxable or non- deductible items and net of applied investment tax credit balances available to offset income taxes otherwise payable in the Canadian corporate entity.

Former Enterprise Software Segment

On May 15, 2020, we disposed of our investment in VIZIYA, which represented our single investment in our Enterprise Software segment, for total cash proceeds of $49.4 million. Net income from the discontinued operations of this segment for the year ended December 31, 2020 was $14,255, comprised of the net loss from operations up to the date of sale of $1,899 and a gain on sale of $17,713 less applicable deferred taxes of $1,559. Net income for the year ended December 31, 2019 was $1,569.

This sale has generated significant cash proceeds to Quarterhill and delivered a strong internal rate of return on our initial investment. Proceeds from the transaction has allowed us to return some capital to shareholders and provide further support for our growth initiatives. Please see additional discussion in Capital and Liquidity section below.

SELECTED CONSOLIDATED ANNUAL RESULTS

	Year ended December 31,		
(in thousands of Canadian dollars, except per share amounts)	**2020**	2019	2018 (unaudited)
Revenue	**144,526**	172,925	85,752
Net income (loss) from continuing operations	**4,428**	11,093	(64,327)
Net income from discontinued operations	**14,255**	1,569	486
Net income (loss)	**18,683**	12,662	(63,841)
Income (loss) per share, basic and diluted	**0.16**	0.10	(0.54)
Dividends declared per share	**0.05**	0.05	0.05
Total assets	**303,809**	324,022	326,924
Non-current liabilities	**5,398**	8,631	10,699

In 2020 our company transitioned from U.S. GAAP to IFRS with a transition date of January 1, 2019. Amounts presented for 2020 and 2019 are prepared in accordance with IFRS as are the total assets and total long-term financial liabilities as at December 31, 2018. Annual revenue, net loss from continuing operations and net income from discontinued operations were prepared in accordance with U.S. GAAP for 2018. Additionally, all revenue amounts exclude discontinued operations. In 2020, we completed the sale of VIZYA Corporation which represented our Enterprise Software Segment. Virtually all of the licensing revenues from our Licensing segment are one-time in nature and accordingly significant fluctuations in revenue and net income will result when volume or dollar value of licenses change from one year to the next. The increase in revenues in 2020 and 2019 are directly related to the closure of large licensing contracts compared to 2018 wherein no similarly sized contracts were closed.

	Revenues		Net income (loss)		Net income (loss) per share (basic)		Adjusted EBITDA *	Adjusted EBITDA per share *(basic)
	Cont. Ops	Disc. Ops.	Cont. Ops	Disc. Ops.	Cont. Ops	Disc. Ops.	Cont. Ops.	
Quarter ended	$ 000's	$ 000's	$ 000's	$ 000's	$	$	$ 000's	$
December 31, 2020	18,092	—	(10,201)	—	(0.09)	—	(6,080)	(0.05)
September 30, 2020	87,997	—	24,528	—	0.21	—	39,035	0.34
June 30, 2020	16,824	1,723	(4,987)	14,455	(0.04)	0.12	(1,992)	(0.02)
March 31, 2020	21,613	4,409	(4,912)	(200)	(0.04)	—	217	0.00
December 31, 2019	48,299	3,389	8,639	(2,266)	0.07	(0.02)	18,687	0.16
September 30, 2019	21,943	11,554	7,348	4,927	0.06	0.04	(4,388)	(0.04)
June 30, 2019	52,878	3,782	(5,632)	(306)	(0.05)	—	17,082	0.14
March 31, 2019	49,806	3,158	738	(786)	0.01	(0.01)	17,138	0.14

Adjusted EBITDA and the respective per share amounts are non-IFRS measures, please refer to "Non-IFRS Disclosures" and "Reconciliation of Adjusted EBITDA" sections of this MD&A

Historically, our operating results have fluctuated on a quarterly basis and we expect that quarterly results will continue to fluctuate in the future. Operating results for interim periods should not be relied upon as an indication of the results to be expected or achieved in any future period or any fiscal year as a whole. The risk factors affecting our revenue and results, many of which are outside of our control, include those set out in our AIF.

Total assets by segment are as follows:

As at	**December 31, 2020**	December 31, 2019
Licensing	**107,852**	103,658
Intelligent Transportation Systems	**65,888**	60,852
Total segment assets	**173,740**	164,510
Total corporate assets	**130,069**	159,512
Total assets	**303,809**	324,022

Dividends declared for the years ended December 31, 2020 and 2019 were as follows:

	December 31, 2020		December 31, 2019	
	Per Share	**Total**	Per Share	Total
1st Quarter	**$ 0.0125**	**$ 1,481**	$ 0.0125	$ 1,500
2nd Quarter	**0.0125**	**1,462**	0.0125	1,473
3rd Quarter	**0.0125**	**1,498**	0.0125	1,475
4th Quarter	**0.0125**	**1,383**	0.0125	1,489
	$ 0.0500	**$ 5,824**	$ 0.0500	$ 5,937

CAPITAL AND LIQUIDITY

The Company's capital management objectives are to maintain financial flexibility in order to pursue its strategy of organic acquisitional growth, pay dividends, and, from time to time, return capital to shareholders, while maintaining an adequate return for shareholders. The Company defines its capital as cash, the aggregate of cash and cash equivalents, short-term investments, restricted short-term investments, bank indebtedness, current and long-term debt, and shareholder's equity. The Company manages its capital structure in accordance with changes in economic conditions. To maintain or adjust its capital structure, the Company may purchase shares for cancellation pursuant to an NCIB or SIB, issue new shares, or raise or retire the debt. In the current year, the Company took advantage of its surplus of cash by settling all of its long-term debt and bank indebtedness to reduce interest expense.

Our cash, cash equivalents and short-term investments, inclusive of any restricted amounts, totaled $141,250 at December 31, 2020 as compared to $89,420 at December 31, 2019 representing an increase of $51,830. At December 31, 2020, we had working capital of $159,661 as compared to $112,179 as at December 31, 2019 to cover long-term obligations of $5,398. Our cash position remains very strong, however, due to the nature of our business segment activities, operating cash flows may vary significantly between periods due to changes in working capital balances.

Quarterhill has a revolving credit facility through Canadian Imperial Bank of Commerce ("CIBC") available in the amount of $8,000 (or the equivalent in U.S. dollars) for general corporate purposes and a further $2,000 for foreign exchange facility. Canadian dollar or U.S. dollar amounts advanced under this credit facility are payable on demand and bear interest at the bank's Canadian prime rate plus 1.0% per annum or U.S. base rate plus 1.0% per annum as may be applicable. Borrowings under this facility are collateralized by a general security agreement over our cash and cash equivalents, receivables and present and future personal property. As at and during the quarter ended December 31, 2020, we had no borrowings under this facility.

IRD has a credit facility through HSBC Bank Canada ("HSBC") which may be borrowed against by way of banker's acceptances at prevailing market rates to a maximum of $9,500 or by way of U.S. dollar advances to a maximum of US$7,033. Borrowings on this facility are restricted to the lesser of $9,500 or US$7,033 and the margin total on the following IRD assets: 90% of secured and government accounts receivable less than 120 days, 75% of good quality Canadian or US domiciled accounts receivable less accounts 90 days and over, 90% of foreign accounts receivable backed by letters of credit and 50% of inventory and 25% of works in process inventory to a maximum of $3,000. As at December 31, 2020 $nil of approximately $7,656 available was drawn on this facility.

IRD's credit facility and demand term loans with HSBC are secured by a general security agreement on IRD's assets held in Canada having a carrying value at December 31, 2020 of $28.6 million. In addition, IRD's subsidiaries in the U.S, Chile and India have provided corporate guarantees as security.

IRD is subject to covenants on its credit facility and long-term debt with HSBC as follows: current ratio greater than 1.2 to 1 (tested monthly); debt to tangible net worth less than 2.5 to 1 (tested monthly); and debt service coverage ratio greater than 1.25 to 1 (tested annually) based on IRD's financial results. At December 31, 2020, IRD is in compliance with these covenants.

Our cash resources are generally used to fund our operations, provide incremental financing to any of our subsidiaries if needed and to acquire additional businesses. We may also fund our ongoing cash requirements through the use of additional short-term and long-term debt and, if desirable based on market conditions, by selling Common Shares and debt securities to the public.

In July 2020, we completed an SIB resulting in the repurchase for cancellation of 2,687,981 Common Shares at an average purchase price of $2.15 per share, plus transaction costs of $0.5 million, for a total of $6.3 million. In addition, pursuant to a Normal Course Issuer Bid ("NCIB") approved by the Toronto Stock Exchange, we repurchased 2,206,636 Common Shares at an average price of $1.95 per share totaling $4.3 million as at December 31, 2020. In total, the Company repurchased 4,894,617 Common Shares for $10.6 million under both SIB and NCIB as at the end of 2020.

CONTRACTUAL OBLIGATIONS

Contractual obligations relating to bank indebtedness, accounts payable and accrued liabilities, long-term debt, and lease liabilities as at December 31, 2020 are as follows:

	Total	Less than 1 year	2 - 3 years	4 - 5 years	Thereafter
Accounts payable and accrued liabilities	20,038	20,038	—	—	—
Lease liabilities	3,759	1,010	1,473	455	821
	$ 23,797	$ 21,048	$ 1,473	$ 455	$ 821

OUTSTANDING COMMON SHARE DATA

We are authorized to issue an unlimited number of Common Shares, 6,350.9 special preferred, redeemable, retractable, non-voting shares and an unlimited number of preferred shares, issuable in series. As at December 31, 2020, there were 114,322,032 Common Shares and no special or preferred shares issued and outstanding. We also maintain the Quarterhill Inc. 2018 Equity Incentive Plan (the "Plan"). Under the Plan, we can issue a maximum of 10% of our issued and outstanding Common Shares from time to time which was, as at December 31, 2020, 11,432,203 Common Shares combined. As at December 31, 2020, we had options granted to purchase up to 6,810,789 Common Shares. During the year ended December 31, 2020, Company repurchased 4,894,617 Common Shares for $10.6 million under both SIB and NCIB as at the end of 2020.

OFF-BALANCE SHEET ARRANGEMENTS

As at December 31, 2020, IRD has an outstanding 100% joint and several liability guarantee to XPCT, for a loan in the amount of 15.0 million yuan or $2.9 million (2019 - $2.8 million); however, IRD can seek recourse against its joint venture partner for any amount greater than IRD's proportionate share of the liability. The amount owing represents the maximum amount available to be drawn under this facility.

RELATED PARTY TRANSACTIONS

Subsidiaries
The consolidated financial statements include the accounts of Quarterhill Inc. and its wholly-owned subsidiaries. Balances and transactions between the Company and its subsidiaries, which are related parties, have been eliminated on consolidation and are not disclosed in this section.

Investment in Joint Venture
Investment in Joint Venture comprises a 50% interest, held by the Company's IRD subsidiary, in XPCT, an ITS products and manufacturing service provider in China. IRD had sales of $nil during the year ended December 31, 2020 (2019 - $38). At December 31, 2020, IRD had amounts owing to XPCT of $48. As at December 31, 2019 accounts receivable from XPCT was $33.

Key management personnel
Key management personnel are Quarterhill Inc.'s President & Chief Executive Officer, Chief Financial Officer and Senior Vice-President, General Counsel & Corporate Secretary and the Chief Executive Officers of each of International Road Dynamics Inc. and Wi-LAN Inc. Other related parties are close family members of the key management personnel and entities controlled by key management personnel. Key management personnel compensation expense for the three months and year ended December 31, 2020 was $1,301, and $3,976 (2019 - $1,046 and $4,015).

PROPOSED TRANSACTIONS

There are no proposed transactions.

CRITICAL ESTIMATES

Key areas involving estimation, uncertainty and critical judgments include the following:

Revenue recognition
Contract revenue, contract costs, contract liabilities and contract assets relating to the Intelligent Systems segment are based on estimates and judgments used in determining the progress of a contract. Estimates include amounts derived to measure the progress of the contract. Progress towards completion is measured by comparing the actual costs incurred to the total estimated costs for the contract. In determining the estimated costs to complete the contracts, assumptions and estimates are required to evaluate issues related to schedule, material and labour costs, changes in contract scope and subcontractor costs. Due to the nature of project contracts, estimates may change significantly between accounting periods. Changes in estimates are reflected in the period in which the circumstances that gave rise to the change became known and affect our revenue, contracts assets, and contract liabilities.

Leases
Management uses judgment in determining whether a contract contains a lease, the interest used to discount the present value of fixed payments in accounting for the lease liability and corresponding right-of-use asset, and in determining whether it is likely that a lease term will be extended.

Asset Impairments and Impairment Reversals
Quarterhill's estimate of the recoverable amount for the purpose of impairment testing requires management to make assumptions regarding estimates of the present value of future cash flows including growth opportunities, economic risk, and the discount rate. These same assumptions are also used when assessing recoverability of impairments previously recognized.

Income taxes and deferred taxes
The Company is subject to income taxes in Canada and other foreign jurisdictions. The calculation of income taxes in many cases, however, requires significant judgment in interpreting tax rules and regulations. The Company's tax filings are subject to audits which could materially change the amount of current and deferred income taxes and liabilities. Additionally, estimation of the income tax provision includes evaluating the recoverability of deferred tax assets based on the assessment of the Company's ability to use the underlying future tax deductions before they expire against future taxable income. The assessment is based on existing tax laws, estimates of future profitability and tax planning strategies. If the future taxable results of the Company differ significantly from those expected, the Company would be required to increase or decrease the carrying value of the deferred tax assets with a potentially material impact on the Company's consolidated statements of financial position and consolidated statements of comprehensive income. The carrying amount of deferred tax assets is reassessed at each reporting period and reduced to the extent that it is no longer probable that sufficient taxable income will be available to utilize all or part of the deferred tax assets. Unrecognized deferred tax assets are recognized to the extent that it is more likely than not that taxable income will be available against which deferred tax assets can be utilized.

Financial assets
Assessments about the recoverability of financial assets, including accounts receivable and unbilled revenue, require judgment as to whether a loss event has occurred and estimate of the amounts and timing of future cash flows.

CONVERSION TO INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS)

As a result of the de-listing of the Common Shares from the Nasdaq, Quarterhill's financial statements are now prepared in accordance with IFRS as issued by the IASB. Since the current year's consolidated financial statements represent our first presentation of its results and financial position under IFRS, they were prepared in accordance with IFRS 1, "First-Time Adoption of IFRS." Subject to certain transition elections, we have consistently applied the same accounting policies in our opening IFRS statement of financial position at January 1, 2019, and throughout all periods presented as if these policies had always been in effect.

Future accounting Pronouncements

Listed below are the standard, amendments, and interpretations that we reasonably expect to be applicable to Quarterhill at a future date and that we intend to adopt when they become effective.

Classification of Liabilities as Current or Non-current (Amendments to IAS 1)
In January 2020, the IASB issued amendments to IAS 1, Presentation of Financial Statements to clarify that the classification of liabilities as current or non-current should be based on rights that are in existence at the end of the reporting period and is unaffected by expectations about whether or not an entity will exercise their right to defer settlement of a liability. The amendments further clarify requirements for classifying liabilities an entity will or may settle by issuing its own equity instruments. These amendments are effective for annual reporting periods beginning on or after January 1, 2023, with earlier application permitted. The adoption of these amendments is not expected to have a significant impact on the consolidated financial statements.

Onerous Contracts – Cost of Fulfilling a Contract (Amendments to IAS 37)
IAS 37 Provisions, Contingent Liabilities and Contingent Assets has been revised to incorporate amendments issued by the IASB in May 2020. The amendments specify which costs an entity includes in determining the costs of fulfilling a contract for the purpose of assessing whether the contract is onerous. The amendments are effective for annual reporting periods beginning on or after January 1, 2022. Earlier application is permitted. The Company is currently assessing the impact of these amendments.

Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 30, IFRS 7, IFRS 4 and IFRS 16)
IFRS 9 Financial Instruments, IAS 39 Financial Instruments: Disclosure, IFRS 4 Insurance Contracts and IFRS 16 Leases have been revised to incorporate amendments issued by the IASB in August 2020. The amendments provide relief to accounting for the modifications required by the interest rate benchmark reform and hedge accounting. In addition, the amendments to IFRS 7 require additional disclosure related to interest rate benchmark reform. The amendments are effective for annual periods beginning on or after January 1, 2021. Earlier application is permitted. The Company is currently assessing the impact of these amendments.

RISKS AND UNCERTAINTIES

Quarterhill and its operating subsidiaries operate in ever-changing business and competitive economic environments that expose it to a number of risks and uncertainties. This MD&A is qualified in its entirety by the risk factors described in our AIF. The risks and uncertainties discussed in greater detail under the heading "Risk Factors" in our AIF are not, however, the only risks we face. We may also be subject to additional risks and uncertainties that are currently unknown or not currently deemed material to our respective business operations. If any of the risks or uncertainties we and our operating subsidiaries face were to occur, they could materially affect our future operating results and could cause actual events to differ materially from those which we expect or that we have described in our forward-looking statements.

In addition to items identified in the AIF, we may be exposed to other risks as follows:

Credit Risk
Credit risk is the risk of financial loss to Quarterhill if a licensee or counter-party to a financial instrument fails to meet its contractual obligations. Financial instruments that potentially subject us to concentrations of credit risk consist primarily of cash and cash equivalents, short-term investments, accounts receivable, and foreign exchange forward contracts.

Our cash and cash equivalents and short-term investments consist primarily of deposit investments that are held primarily with Canadian chartered banks. Management does not expect any counter-parties to fail to meet their obligations.

We recognize a loss allowance provision using the simplified approach based on lifetime expected credit losses. Our exposure to credit risk with our accounts receivable from customers is influenced mainly by the individual characteristics of each customer. Quarterhill's customers are for the most part, large multinational companies or government organizations which do not have a history of non-payment. Credit risk from accounts receivable encompasses the default risk of our customers. Prior to entering into transactions with new customers, we assess the risk of default associated with the particular customer. In addition, on an ongoing basis, management monitors the level of accounts receivable attributable to each customer and the length of time taken for amounts to be settled and where necessary, takes appropriate action to follow up on those balances considered overdue. We have had no significant bad debts for any periods presented.

None of the amounts outstanding have been challenged by the respective counterparties and we continue to conduct business with them on an ongoing basis. Accordingly, management has no reason to believe that these balances are not fully collectable in the future.

Quarterhill reviews financial assets on an ongoing basis with the objective of identifying potential matters which could delay the collection of funds at an early stage. Once items are identified as being past due, contact is made with the respective customer to determine the reason for the delay in payment and to establish an agreement to rectify the breach of contractual terms.

Liquidity Risk
Liquidity risk is the risk that we will not be able to meet our financial obligations as they fall due. Our objective in managing liquidity risk is to ensure that we have sufficient liquidity available to meet our liabilities when due. We manage our liquidity needs through various sources including cash generated through operations, cash reserves, various revolving credit facilities, and the issuance of Common Shares. At December 31, 2020, we had cash and cash equivalents and short-term investments of $141,250.

Currency Risk
Portions of Quarterhill's portfolio companies' respective revenues and operating expenses are denominated in Canadian dollars, Indian rupees, Chilean pesos, Euros, and Chinese Yuan. Because Quarterhill's functional currency is in US dollars, our operating results are subject to changes in the exchange rate of the foreign currencies (primarily Canadian dollar) relative to the US dollar. Any decrease in the value of the Canadian dollar relative to the US dollar has an unfavorable impact on Canadian dollar denominated revenues and a favorable impact on Canadian dollar denominated operating expenses. Approximately 5.2% of our cash and cash equivalents and short-term investments are denominated in Canadian dollars and are subject to changes in the exchange rate of the Canadian dollar relative to the US dollar.

We may manage the risk associated with foreign exchange rate fluctuations by, from time to time, entering into foreign exchange forward contracts and engaging in other hedging strategies. To the extent Quarterhill engages in risk management activities related to foreign exchange rates, we may be subject to credit risks associated with the counterparties with whom we contract.

Quarterhill's objective in obtaining foreign exchange forward contracts is to manage our risk and exposure to currency rate fluctuations related primarily to future cash inflows and outflows of Canadian dollars. We do not use foreign exchange forward contracts for speculative or trading purposes. For the three months and year ended December 31, 2020 we did not hold any foreign exchange forward contracts.

The COVID-19 Pandemic
Since the onset of the COVID-19 Pandemic and the impacts of this crisis on the global economy, our businesses continue to evolve as we adapt to manage, operate, and sustain these businesses during these uncertain times.

Many countries in which we operate remain in COVID-19-related lockdowns of some degree and/or have imposed restrictions on non-essential business activities. As a result, each of our business segments has undertaken a number of steps to protect their employees while continuing their respective business operations. Throughout the past year, we have continued to employ proactive measures including closing offices, making provision for employees working from home, eliminating travel and closely following the guidelines issued by health and regulatory authorities. Over the past year, our human resource policies have evolved to respond to questions or concerns from our employees while continuing to explore opportunities to return to "in office" work environments. As a result of our proactive measures, our portfolio companies remain in full operation and continue to execute on the delivery of existing customer mandates, while also working to build and sustain business pipelines and advance new opportunities through their respective sales cycles.

While we are not immune to the impacts of the COVID-19 Pandemic, it appears that our businesses may have been less affected than other companies. The majority of the work within each portfolio company remains ongoing, and in the case of the Intelligent Transportation Systems business segment, certain of IRD's work has been deemed “essential” by applicable governing authorities. There remains some risk, however, that certain project work or license sales will be deferred or restricted and new orders delayed, particularly in jurisdictions outside of Canada and the United States. In addition, we are experiencing some work inefficiencies due mainly to travel restrictions and also some delay in supply chain deliveries.

Diversification is central to Quarterhill’s business model and, as such, revenues are not highly concentrated within any geography, business, or client base. During this period of uncertainty, we are prudently managing costs and safeguarding the strength of our balance sheet to support the resiliency of our business.

All risk factors should be considered carefully and readers should not place undue reliance on our forward-looking statements and forward-looking information. Any of the matters described under this “Risks and Uncertainties” section could have a material adverse effect on our businesses, results of operations and financial condition, in which case the trading price of the Common Shares could decline and a holder of Common Shares could lose all or a part of their investment. Please also refer to the “Cautionary Note Regarding Forward-Looking Statements” section of this MD&A.

DISCLOSURE CONTROLS AND PROCEDURES AND INTERNAL CONTROL OVER FINANCIAL REPORTING

Our Chief Executive Officer and Chief Financial Officer have designed or caused to be designed under their supervision, disclosure controls and procedures which provide reasonable assurance that material information regarding Quarterhill is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer in a timely manner.

In addition, our Chief Executive Officer and Chief Financial Officer have designed or caused to be designed under their supervision internal controls over financial reporting (“ICFR”) to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements. The control framework used to design our ICFR is the “Internal Control - Integrated Framework (2013)” published by the Committee of Sponsoring Organizations of the Treadway Commission.

Our Chief Executive Officer and Chief Financial Officer have evaluated, or caused to be evaluated under their supervision, whether or not there were changes to our ICFR during the period ended December 31, 2020 that have materially affected, or that are reasonably likely to materially affect our ICFR. No such changes were identified through their evaluation.

There were no changes to our ICFR during the year ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our ICFR.

A control system, no matter how well designed, can provide only reasonable, not absolute, assurance that its objectives are met. Due to inherent limitations in all such systems, no evaluations of controls can provide absolute assurance that all control issues, if any, within a company have been detected. Accordingly, our disclosure controls and procedures and our internal controls over financial reporting are effective in providing reasonable, not absolute, assurance that the objectives of our control systems have been met.

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