MANAGEMENT'S DISCUSSION & ANALYSIS

Year Ended December 31, 2019

(Expressed in Canadian dollars)

The following Management's Discussion and Analysis ("MD&A") of Novra Technologies Inc.("Novra") should be read in conjunction with the audited Consolidated Financial Statements for the years ended December 31, 2019 and 2018, and related notes included therein (the "Consolidated Financial Statements"). The Consolidated Financial Statements have been prepared in accordance with International Financial Reporting Standards ("IFRS"). All information in this MD&A is presented in Canadian dollars, unless otherwise indicated. Tabular dollars are in thousands, except per share amounts. Amounts in tables may not reconcile due to rounding differences.

Throughout this MD&A, "we", "us", "our", "Novra", and "Company" refer to Novra Technologies Inc. and its subsidiaries.

This MD&A is dated as of June 15, 2020 and is current to this date. The MD&A and the Consolidated Financial Statements were approved and authorized for issuance by the Board of Directors on June 15, 2020.

Financial statements, MD&A and other information relating to Novra are available on SEDAR at www.sedar.com.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This MD&A contains "forward-looking statements" within the meaning of applicable Canadian securities laws, concerning but not limited to: our outlook, the expected cost savings from integrating Wegener operations with the Novra Group, proposed acquisition of remaining 49% of Wegener, anticipated developments in our operations in future periods, the adequacy of Novra's financial resources and other events and conditions that may occur in the future. Forward-looking statements are generally identifiable by words such as "expects", "anticipates", "believes", "intends", "estimates", "predicts", "potential", "targeted", "plans" "possible", and similar expressions, or statements that events, conditions or results "will", "may", "could" or "should" occur or be achieved. As such, forward-looking statements are not historical facts but reflect our current assumptions and expectations regarding future events. These are subject to a number of risks and uncertainties that could cause actual results or events to differ materially from current expectations and assumptions. Some of these risks and uncertainties are described herein under the "Risks and Uncertainties" section of this MD&A.

For the above reasons, readers are cautioned not to place undue reliance on forward-looking statements.

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BUSINESS OVERVIEW

Novra Technologies Inc. (headquartered in Winnipeg, Canada) is a public company on the TSX Venture Exchange ("TSX-V") and trades under the stock symbol "NVI" and is a Class 1 reporting issuer. We have been in the satellite data distribution business since 2000. In 2016, we significantly expanded our product portfolio and global footprint with the acquisition of International Datacasting Corporation ("IDC"), a long-time leader in the same sector (based in Ottawa, Canada). At the end of 2017, Novra acquired a 51.6% controlling interest of Wegener Corporation ("Wegener") to further expand its footprint in digital media management and distribution technologies for applications including digital signage, radio and television. The companies joined together to form the Novra group of companies("Novra Group") – see our group website at www.novragroup.com.

Today, the Novra Group is a global business with customers on every continent. We are a technology provider and we offer a comprehensive product portfolio including hardware, software, and services. In addition, our areas of expertise and added value include: encryption and cybersecurity, next-generation hybrid networks (satellite/terrestrial/cloud), and efficient bandwidth utilization.

In these times of accelerating change and global uncertainty, our business agility and drive for innovation are more important than ever. Our competitive advantage is our people and their 30 years of knowledge and experience in developing innovative products along with the deep relationships that we have established with our clients. These close customer relationships and our extensive engineering experience provide the perspective and foundation for our continuing development of advanced products and flexible solutions.

Our core product lines are:

- *Video distribution:* products and systems for providing end-to-end solutions for traditional and non-traditional video networks. This is a key focus area for our innovation activities, with on-going projects in augmented reality, remote collaboration and emerging technologies. Our video products target the following key market niches:
  - Broadcast video networks of all sizes
  - Digital program insertion (for targeted advertising, regionalization, and blackout management)
  - Live and file-based video content distribution
  - Digital signage
  - IPTV
  - Professional-quality streaming video

- *Broadcast Radio: W*e are a leading provider of end-to-end infrastructure solutions to broadcast radio networks small, medium, and large. We have a reputation for reliable, cost-effective delivery of high-quality audio via satellite, terrestrial, or hybrid networks. The radio product line includes uplink- and receive-site equipment as well as network management, encryption, and targeted regionalization/ad insertion options. We have both long-established and respected product lines and innovative new products recently released for this market.

- *Data distribution:* our broadband multimedia distribution technology is ideally suited for networks requiring fast, ultra reliable, secure delivery of data via satellite and via Internet or private IP network. In addition to providing the hardware infrastructure (transmit and receive), we offer an advanced content distribution network (CDN) software solution (Datacast XD) for ultra-reliable and secure file broadcasting.

- *Digital cinema:* we provide leading digital cinema networks with their core distribution infrastructure (uplink equipment, content management, and network management) and high-end appliances for cinemas as well as decoders for live events and alternative content(entertainment and sports) in 2D and 3D. Additionally, we offer a digital cinema distribution software solution for integration onto commercially available servers and third-party equipment. Recent advances in this product line have enabled our solutions to provide secure file delivery speeds that are unparalleled in the market.

- *Satellite and terrestrial broadband receivers:* we offer a line of cost-effective, reliable DVB and ATSC compliant receivers for the expanding broadband communications network market. These provide standalone communication gateways to local networks or have been integrated into a wide range of purpose-built appliances.

OVERALL PERFORMANCE

While Novra's fourth quarter revenue is traditionally strong, 2019 did not follow the usual pattern. Starting in Q3, we noticed delays in projects across markets and geographies, which we believe was an indication of an economic slowdown in most G20 economies that began even before the emergence of the COVID-19 pandemic. As a result, revenue for Q4 was down significantly this year and this materially impacted both our quarterly and annual financial results. In response to the evolving market dynamics, management took targeted actions including implementing additional cost saving measures.

The financial highlights below include consolidation of Novra's subsidiaries; International Datacasting (acquired in 2016) and Wegener Corporation (51.6% controlling interest acquired in 2017).

Q4 2019 vs. Q4 2018:

- Total revenue was $1.8 million, compared to $3.4 million in Q4 2019.
- Gross profit at $750 thousand and was 41.1% of total revenue, compared to $1.8 million or 54.4%.
- Operating expenses were $1.4 million, compared to $1.6 million from prior year.
- Net loss was $860 thousand, compared to income of $535 thousand in Q4 2018.
- Adjusted EBITDA was a loss of$358 thousand, compared to Adjusted EBITDA of positive $647 thousand (Adjusted EBITDA is a non-IFRS financial measure - refer to "Discussion of Operations" section below for further details and a reconciliation to IFRS).
- Included in the Q4 results, and reducing net income, is approximately $154 thousand of amortization expenses for intangible assets associated with the prior purchase of51% of Wegener.

Year 2019 vs. 2018:

- Total revenue of $9.8 million, a decrease of 8%.
- Gross profit at $4.8 million was 49.4% of total revenue, compared to $5.6 million or 52.5%.
- Operating expenses were $6.1 million, compared to $6.4 million, a reduction of 6%.
- Net loss was $1.7 million, compared to a loss of $552 thousand in 2018.
- Adjusted EBITDA was $213 thousand, compared to Adjusted EBITDA of $319 thousand.
- Working capital was $950 thousand, a 61% decrease from December 31, 2018.
- As of December 31, 2019, we had $1.9 million in deferred revenue, versus $2.1 million in 2018.
- Reducing our net income, is approximately $751 thousand of amortization expenses for intangible assets associated with the prior purchase of IDC and the 51% of Wegener. For 2018, this amortization expense was $906 thousand.

Our drive to realize synergies and efficiencies resulted in consolidated operating expenses continuing to trend down this reporting period compared to last year and Adjusted EBITDA for the year remained positive in 2019. Adjusted EBITDA provides an important financial measure of Novra's operating performance, allowing comparison of core operating results from period to period (see EBITDA and Adjusted EBITDA below for details regarding calculation of this non-IFRS measure). We will continue to actively control and adjust operating expenses in response to company performance and current volatile market conditions. Note that adoption of IFRS 16 in 2019 (see Note 2 of the Consolidated Financial Statements) had a positive effect on Adjusted EBITDA.

A significant portion of our revenue is recognized over time; primarily customer support, operations services and extended warranty revenue. This creates significant deferred revenue to be recognized in the future. Our continued strong deferred revenue balance creates a degree of certainty to our revenue going forward.

RECENT DEVELOPMENTS AND OUTLOOK

Looking back at 2019:

Our first half of 2019 started on a strong note as sales, bookings and our sales funnel were healthier compared to the same period in 2018 and we saw new opportunities in every one of our priority vertical markets. We saw strong sales from North America, Latin America, Europe and Asia, showing the geographical diversity of our clients.

We also had anticipated a strong second half of 2019, but we saw, starting in the third quarter, several major opportunities that we were anticipating closing in Q3/Q4 delayed into 2020. We noticed this sudden slowdown of projects across all geographical areas and we believe it is indicative of a global economic slowdown in most of the G20 economies that began even before the emergence of the COVID-19 pandemic. Management took steps to monitor the situation and implement appropriate steps to respond to evolving global market dynamics.

Although our sales for the first nine months of 2019 were higher compared to same period of 2018, Q4—traditionally a very strong quarter—was unexpectedly weaker than Q4 2018. This sudden slowdown of sales caused management to conserve cash by delaying the acquisition of Wegener's remaining 49% of its shares and to renegotiate the expiry dates of the purchase agreement with Wegener and the term sheet with Wegener's secure lender from end of Dec 2019 to the end of March 2021.

Highlights from 2019:

New products and technology, new opportunities

- We unveiled four new Novra Group products at the NAB 2019 show. Two of these were nominated for the prestigious **NAB Product of the Year award**. The new Edgecaster Pro Digital Program Insertion platform receiver and the new iPump 762 Pro, targeting the digital signage and enterprise video markets, which won the prestigious award for Hardware Infrastructure.
- For the radio market, we released the next-generation **MAP audio receiver** (MAP stands for Modular Architecture Platform), part of our drive to reduce product costs and improve functionality.
- For the video market, we launched the **Edgecaster Pro**—a Digital Program Insertion platform for insertion, regionalized content and blackout management. We won our first project for this product with **MVS Television in Mexico**, a major broadcaster, who is using this to customize its video channel by region.
- For the data market, we released the next generation of the **S400Pro data receiver** and supported more than a dozen successful trials
- We released the next generation **MISTiQ cloud platform** for hybrid satellite and internet delivery. Our customer, **Mars Hill Networks** in the US, rolled out MISTiQ to power the first internet-only connected radio stations in its network. This is a key development as many radio networks consider moving to hybrid or internet-only networks.
- We expanded our suite of products for video applications including broadcast, **OTT and IPTV networks**. We integrated **Broadpeak's** nanoCDN technology into the S400 Pro Data receiver to enable OTT delivery to multiscreen environments.
- We joined the **SRT Alliance** and have integrated SRT (Secure Reliable Transport) technology for improved broadcast quality over internet into our MISTiQ-enabled products.
- We also released a high-performance audio encoder in partnership with Digigram.

New orders, and follow on business:

- We expanded existing radio networks and installed new radio networks for customers around the world including Guatemala, Vietnam, Mexico, India, Bangladesh, Australia, and New Zealand.
- We continue to have strong follow-on orders from our major US radio network customer, US government projects for video and data distribution as well as encryption, and our digital signage customers in the US.
- We provided **IP Encapsulators** to a major US video services provider for their ATSC 3.0 development platform (ATSC 3.0 is a next-generation advanced TV protocol supporting IP data)
- Orders for our **weather data distribution products** continued steadily for the US, Europe and Asia.
- We continue to enjoy steady orders for a major IPTV network in Japan.

Corporate and operations:

- We continued to achieve cost efficiencies with the integration of Wegener into the Novra group of companies. In Q3 we began to realize significant reductions in operating expenses for administration and for research and development. This continued into Q1/Q2 of 2020 and we anticipate continued reduction of expenditures in 2020 compared to 2019 as we finalize our integration of the three companies.
- Continued to develop new and innovative products by taking the best features from our existing product lines to create flexible, modular and cost-effective solutions that will meet market demand and increase our market share.
- Implemented new modular upgradeable products, to provide our clients with protection of their investment even if in the future their requirements change to meet new operational needs. This will give us a competitive advantage and, in many cases, shorten the technology selection process that clients currently go through.
- Initiated increased focus on our re-seller network to manage, refocus and energize our global partners to enable them to offer a wider range of products and solutions to their clients.

2020: challenges and opportunities:

We were expecting 2020 results would show a marked improvement, with delayed projects coming to fruition and with the focused work we have been doing to reach new customers, expand the networks of current customers, cut cost, and provide products needed in our current and new market spaces. The COVID-19 pandemic has caused continued delays in several major projects and created challenges for our customers and partners. We have been able to continue working without interruption in our ability to ship orders, provide exceptional support to our customers and advance R&D innovation initiatives. Various government assistance programs have enabled us to keep full staffing in place during this time of severely dampened economic activity. We expect revenue for the first half of 2020 to be very weak compared to 2019, with COVID-19 having a major impact on our clients.

Although COVID-19 has affected our Q1/Q2 revenue, we are very encouraged by the sales activity so far in 2020 and that our clients are not cancelling their projects. We are also seeing an increase in sales activity as our existing and new clients are requesting quotes, product evaluation and participation in Proof-Of-Concept (POC) projects as they prepare for Q3/Q4.

We anticipate a strong second half as a result of our sales efforts and our R&D activities. These have resulted in a number of new products, which have now been selected for new project rollouts, and we are starting to receive initial orders. This is particularly good news for Novra as it positively reflects on our corporate goals and our substantial R&D investment over the past 3 years.

Highlights from early 2020:

- We have an initial order from a major US Christian radio broadcaster for custom product to help them retrofit their extensive network

- We have been selected and received initial orders from a new customer using our S400 Pro Data receiver to distribute blockchain data via satellite. This is a new vertical market for Novra and we are very proud to have the won the client's confidence for such a critical application.

- We are working with resellers on rolling out regional MISTiQ networks. We developed an entry-level version of MISTiQ called On-Ramp, to help churches and other organizations communicate while things are closed down due to social distancing.

- For the past 8 months we worked closely with a US based communications provider to modified our S400 to meet their needs and we expect an initial order before the end of June as they start their replacement of their legacy equipment over the next couple of years.

- Our team is redoubling marketing efforts to work with customers and resellers through a series of webinar events and launching a "virtual tradeshow booth" online to generate new business.

We are continuing to execute on our stated corporate vision to bring great companies with complementary technologies together to capitalize on market opportunities by consolidating and refocusing engineering to provide world-class leading-edge products and services to our clients.

Novra has significantly evolved into a strong, scalable global company in the growing multimedia broadband content distribution business. We are progressing toward our goal of moving from being an engineering-centric to client-centric company. As such, our product development is being driven by identified client requirements and real market trends. Our clients are looking for cost effective solutions with built-in flexibility to enable them to deliver their services with the lowest operational costs, not only today but over the lifespan of our products. Only offering hardware and software is not adequate in this technologically dynamic environment. We want to offer to our clients complete solutions and would like for them to consider Novra as their technology partner that they can depend on to help them solve their engineering challenges. We take these challenges very seriously and all of us at the Novra Group of companies are committed and determined in addressing them.

SELECTED ANNUAL INFORMATION

The following tables provides a summary of financial data derived from our audited Consolidated Financial Statements for the past three years:

(in thousands of dollars, except with respect to earnings (loss) per share)

		2019		2018		2017
Revenue	$	9,756	$	10,630	$	9,532
Gross profit	$	4,824	$	5,579	$	4,804
Operating expenses	$	6,056	$	6,411	$	3,853
Depreciation and amortization	$	1,432	$	1,125	$	380
Foreign exchange gain (loss)	$	(259)	$	349	$	(38)
Net income (loss)[1]	$	(1,719)	$	(375)	$	778
Basic earnings per share ("EPS")	$	(0.05)	$	(0.02)	$	0.02
Diluted EPS	$	(0.05)	$	(0.02)	$	0.02
Total assets	$	10,264	$	10,874	$	9,060
Total non-current liabilities	$	5,354	$	3,663	$	2,995

(1) Net income (loss) attributed to shareholders of Novra, excludes Wegener non-controlling interest.

Factors causing significant fluctuations for the above years were as follows:

2019 vs. 2018:

- Unexpected delays of Q4 projects, for which we were selected as the technology vendor, into 2020.
- A strengthening Canadian dollar in 2019 lead to a significant foreign exchange loss, compared to a foreign exchange gain in 2018. This alone accounts for $608 thousand of the increase in net income loss.
- The combination of reduced revenue in 2019 with certain fixed production-related costs contributed to a decrease in gross profit and gross margin compared to 2018.
- On a stand-alone basis Wegener shifted from a significant loss in 2018 to a slight profit in 2019, but the amortization for intangible assets related to the acquisitions of IDC and Wegener continued to place a significant drag on profitability in 2019.
- Assets, liabilities and depreciation were all affected by adoption of IFRS 16 in 2019 (see Note 2 to the Consolidated Financial Statements for a reconciliation of the effect of IFRS 16).

2018 vs. 2017:

- The Wegener acquisition contributed to growth in revenue, along with significant increase in expenses.
- The change from net income to net loss was driven entirely by losses at Wegener and amortization of intangible assets related to the acquisition of IDC and Wegener.

DISCUSSION OF OPERATIONS

The following table shows selected information from our Consolidated Financial Statements, including a reconciliation of IFRS to non-IFRS measures, for the period indicated:

(in thousands)	Three Months Ended December 31,				Year Ended December 31,			
	2019		2018	% Chg	**2019**		2018	% Chg
Revenue by type:								
Products	**1,210**	$	2,714	-55%	**7,183**	$	8,208	-12%
Services	**608**		692	-12%	**2,574**		2,422	6%
Total revenue	**1,817**		3,406	-47%	**9,756**		10,630	-8%
Gross profit	**747**		1,854	-60%	**4,824**		5,579	-14%
Gross margin	***41.1%***		*54.4%*		***49.4%***		*52.5%*	
Operating expenses	**1,439**		1,603	-10%	**6,056**		6,411	-6%
Operating income (loss)	**(692)**		252	NM	**(1,232)**		(831)	48%
Other income (expenses)	**(168)**		(284)	-41%	**(470)**		279	NM
Net income (loss) as reported under IFRS	**(860)**	$	535	NM	**(1,702)**	$	(552)	208%
Adjustments:								
Finance income	**-**		-	NM	**-**		(2)	NM
Finance costs	**27**		18	49%	**212**		72	194%
Depreciation and amortization	**339**		256	32%	**1,432**		1,125	27%
EBITDA - non-IFRS measure	**(495)**		809	NM	**(59)**		643	NM
Loss (gain) on foreign exchange	**133**		(188)	NM	**259**		(349)	NM
Share-based compensation	**3**		25	-87%	**12**		25	-51%
Adjusted EBITDA - non-IFRS measure	**(358)**	$	647	NM	**213**	$	319	-33%

NM - Not meaningful

Revenue and Gross Margin

Q4 2019 vs. Q4 2018:

Total revenue decreased 47% to $1.8 million. The revenue decrease was attributable both to higher than normal revenue in Q42018, resulting from significant product shipments and services delivered by Wegener during that quarter and to reduced revenue in 2019 as a result of delays in certain customer projects.

Gross margin was 41.1% for the current quarter, a 13.3% reduction compared to the same quarter in 2018. The decrease in gross margin was driven by reduction in services sales, changes in product mix and certain fixed costs in the production area being expensed against lower revenue.

Year 2019 vs. 2018:

Total revenue for the full year decreased 8% to $9.8 million. This reduction was entirely in product sales, while services revenue increased year over year. Despite the increase in services revenue, the gross margin fell to 49.4%, a reduction of 3.1% from 2018, due to product mix and certain fixed costs in the production area being expensed against lower revenue.

For 2019, our top 10 customers accounted for 48.6% of total revenue with the largest accounting for 20% or $1.8M. For the same period last year Novra's Top 10 customers accounted for 63% of total revenue, with the largest accounting for 24% or $2.6M. No other customer accounted for more than 10% of total revenue.

While our revenue may be concentrated on a few customers quarterly, with approximately 2,000 customers in over 100 countries, including over 200,000 installations since inception, we have a well-established customer base to provide diversification in our revenue stream. The following table summarizes the geographic distribution of our revenues for the year.

Geographic Market	2019	2018
Americas ex-Canada	**$ 7,139**	$ 8,070
Canada	**684**	940
EMEA	**1,257**	1,068
APAC	**676**	552
	$ 9,756	$ 10,630

Operating Expenses

(in thousands)	Three Months Ended December 31,			Year Ended December 31,		
	2019	2018	% Chg	**2019**	2018	% Chg
General and administrative ("G&A")	**367**	$ 402	-9%	**1,472**	$ 1,630	-10%
Sales and marketing ("S&M")	**279**	359	-22%	**1,247**	1,273	-2%
Research and development, net ("R&D")	**793**	842	-6%	**3,337**	3,508	-5%
Total operating expenses	**1,439**	$ 1,603	-10%	**$ 6,056**	$ 6,411	-6%

Total OPEX for the year 2019 has been reduced by 6% from the same period in 2018. For the three-month period there is a 10% reduction compared to the previous year. For financial reporting purposes, we allocate facility costs to OPEX (G&S, S&M, R&D) and cost of revenue.

General and administrative ("G&A") expenses consist primarily of compensation paid to the corporate, IT, and finance staff as well as professional fees and public company related costs. Our G&A costs decreased by 10% to $1,472 thousand (2018 - $1,630 thousand), a decrease of $158 thousand.

Our Sales and Marketing ("S&M") costs include compensation, including sales commissions, paid to our sales team, as well as tradeshow, promotion and travel and entertainment costs. Our S&M costs decreased 2% to $1,247 thousand (2018 - $1,273 thousand), a decrease of $26 thousand.

Research and Development ("R&D") costs continue to be a significant component of our total operating expenses as we continue to work to develop innovative products and solutions to remain competitive in our industry and expand into new high-growth markets. R&D costs include primarily compensation paid to engineering personnel and prototype costs. Notably, expenses related to amortization of intangible assets from the acquisitions of IDC and (controlling interest in) Wegener are also included in R&D costs. This amortization of $751 thousand for the 2019 reporting period distorts our R&D expenditures as a percentage of revenue and it has an impact on our net operating results.

R&D product development costs are expensed as incurred; we do not capitalize development costs. Capitalizing appropriate development costs could result in increased assets and reduced operating expenses, improving net income. With significant development being invested in new products and technologies with extended useful lives, Novra may move to capitalize development costs in the future, in order to appropriately present our technology assets and R&D expenses.

Foreign Exchange Gain (Loss)

Although we generate a significant portion of our revenue outside of Canada, denominated in USD and Euro currencies, we have determined Novra's functional currency to be Canadian dollars. Additionally, most sales in Canada are also denominated in USD currency. Further, the procurement for most of our raw materials is denominated in USD currency; however, our domestic operating costs are denominated in CAD currency. Accordingly, Novra's financial position and operating results are significantly exposed to foreign currency movements. We actively manage our foreign currency risk and may also enter speculative currency positions based on management's best judgement.

Additional earnings volatility arises from the translation of monetary assets and liabilities denominated in foreign currencies at the rate of exchange on each date of the Consolidate Financial Position; the impact of which is reported as a foreign exchange gain or loss.

In 2019, we realized a foreign exchange loss of $259 thousand, compared to a gain of $348 thousand in 2018. In addition, a net unrealized gain of $80 thousand is related to the translation of Wegener's financial statements and recorded in Other Comprehensive Income (Loss).

At December 31, 2019, the foreign currency denominated assets and liabilities, subject to remeasurement, are as follows:

(in thousands)		**USD**		**Euro**
Assets	$	2,772	€	26
Liabilities		(630)		0
Net assets before hedging	$	2,142	€	26
Currency derivative contracts		-		-
Net assets -unhedged	$	2,142	€	26
Impact on Novra's earnings if 5% change in foreign exchange rates	**$**	**107**	**€**	**1**

At December 31, 2019, if the Canadian dollar had weakened/strengthened by 5% against the U.S. dollar and Euro with all other variables held constant, the resulting change to Novra's consolidated net loss would have been $107thousand. The above excludes Wegener's assets and liabilities which are denominated in USD.

Finance Costs

Finance costs were $212 thousand for 2019, a 194% increase over the same period last year (2018 – $72 thousand). The increase is a result of the allocation of interest expense from operating leases due to the adoption of IFRS 16. We also made payments to reduce balances on the Western Economic Diversification Canada (WEDC) repayable contribution and the $US floating rate IMT promissory note. There were no bank borrowings on our RBC credit facilities in 2019.

Depreciation and Amortization

The increase in depreciation and amortization cost for the year 2019over 2018was due to the adoption of the new accounting standard – IFRS 16. Operating leases are now being depreciated over their respective lease term, which resulted in a deprecation charge of $534 thousand. The amortization of intangible assets related to the acquisitions of IDC and Wegener was $751 thousand for the 2019 reporting period. This was lower than the same expense last year (2018: $906 thousand) because amortization of intangible assets related to the IDC acquisition completed during 2019 and therefore did not continue for the entire year. This partially offset the increase caused by adoption of IFRS 16.

Tax Expense

Due to the net operating loss in 2019, there was no current tax provision to recognize.

Despite the significant non-capital loss carry forwards and available investment tax credits (see Note 16 of the Consolidated Financial Statements) to shelter future taxable income from income taxes, we have not recognized deferred tax asset at December 31, 2019 and 2018 because management concluded it was not probable to realize this benefit in the foreseeable future. In making this determination, management considered the uncertainties in projecting future taxable income, the uncertainties related to the technology industry and competition in which we operate, and the lack of available income tax planning strategies.

EBITDA and Adjusted EBITDA

EBITDA and Adjusted EBITDA are non-IFRS measures. EBITDA is defined as earnings before income tax expense, net financing costs, depreciation and amortization. Adjusted EBITDA is defined as EBITDA adjusted for foreign exchange gain or loss, any acquisition-related costs, share-based compensation, any restructuring charges, any material write-down of inventories, and any other material impairment charges.

Management believes that EBITDA and Adjusted EBITDA provide important financial measures of Novra's operating performance because they allow management, investors, and other stakeholders to evaluate and compare Novra's core operating results from period to period by removing the impact of its capital structure (interest expense), asset base (depreciation and amortization), and tax consequences. Because EBITDA and Adjusted EBITDA do not have any standardized meanings prescribed by IFRS, other companies may calculate these non-IFRS measures differently, and therefore our EBITDA and Adjusted EBITDA may not be comparable to similar titled measures of other companies. Accordingly, *readers are cautioned to not place undue reliance on these financial measures and encouraged to read all IFRS accounting disclosures presented in the audited Consolidated Financial Statements.*

Adjusted EBITDA for calendar year 2019 and for Q4 was $213 thousand and <$358> thousand, respectively, compared to an Adjusted EBITDA of $319 thousand and $647 thousand for the same periods in 2018, respectively. The decrease in full year EBITDA was driven by the decrease in revenue and gross margin.

SELECTED QUARTERLY FINANCIAL INFORMATION
(dollars in thousands, except per share data)

The following table sets out selected financial information for our current and eight most recently completed quarters.

	Dec 31 2019	Sep 30 2019	Jun 30 2019	Mar 31 2019	**Dec 31 2018**	Sep 30 2018	Jun 30 2018	Mar 31 2018	**Dec 31 2017**
Revenue	**$ 1,817**	$ 3,016	$ 2,423	$ 2,500	**$ 3,406**	$ 3,558	$ 1,594	$ 2,072	**$ 1,801**
Gross profit	**747**	1,849	1,319	909	**1,854**	2,087	758	880	**918**
Operating expenses	**1,439**	1,374	1,639	1,604	**1,603**	1,527	1,582	1,699	**1,010**
Foreign exchange gain (loss)	**(133)**	68	(108)	(86)	**188**	(37)	90	109	**10**
Net income (loss) as reported under IFRS	**(860)**	493	(491)	(844)	**535**	467	(791)	(763)	**(145)**
Adjusted EBITDA income (loss)	**(358)**	796	75	(299)	**647**	862	(592)	(598)	**41**
Earnings (loss) per share - diluted	**$ (0.026)**	$ 0.015	$ (0.015)	$ (0.025)	**$ 0.016**	$ 0.012	$ (0.024)	$ (0.023)	**$ (0.004)**
Weighted average shares outstanding	**33,372**	33,372	33,372	33,360	**33,467**	33,348	33,348	33,336	**33,308**

We occasionally receive large orders from customers and partners which can provide revenue visibility for future quarters. However, a large portion of Novra's quarterly revenues are generated from orders received in the quarter rather than from order backlog going into the quarter. As a result, Novra's revenue, profitability and cash flows are difficult to predict and may fluctuate significantly from quarter to quarter.

We expect continued significant volatility in revenue from quarter to quarter due to particular timing of orders from existing customers, continued economic instability and significant unpredictability in the length of sales cycles with new and existing customers in the sales pipeline. The result of limited order visibility is that revenue and, accordingly, profitability and cash flows, will be difficult to predict and will fluctuate. We also expect COVID-19 to impact markets and economies and therefore our business (see Risk and Uncertainties)

LIQUIDITY

Quick Ratio

Our principal liquidity requirements are for working capital, capital expenditures and for pending acquisitions as previously announced. Management measures liquidity based on Novra's unrestricted cash and accounts receivable. The following table shows our total liquid assets at the following reporting dates.

	December 31, 2019		December 31, 2018	
Cash	**$**	**3,176**	$	4,138
Accounts receivable		**808**		1,215
Total liquid assets	**$**	**3,984**	$	5,353
Quick ratio (1)		**1.69:1**		1.80:1

(1) Total liquid assets over total current liabilities, excluding amounts due to related parties and deferred revenue

The quick ratio as defined above is a non-IFRS financial measure. We believe this an important financial metric to investors and other stakeholders to assess Novra's ability to meet its third-party short-term obligations with its most liquid assets. The related parties have expressed no intent to call on their debt in the near term until such time that Novra is in a stronger capital position. We also excluded deferred revenue in the quick ratio calculation as it does not represent a contractual financial obligation i.e. it is a liability that will reverse once revenue recognition has been met.

At December 31, 2019, Novra's quick ratio was 1.69:1 or $1.69 of liquid assets available to cover each $1.00 of third-party current liabilities, a slight decrease from 1.80:1 at December 31, 2018.

The following is a summary of cash flows by activities for 2019 vs. 2018.

Operating activities

We had negative cash flows from operating activities of $340 thousand for 2019, compared to positive cash flows from operating activities of $2.7 million for 2018. In 2019 negative cashflow was mainly driven by the net loss, whereas in 2018 the positive cashflow was mainly driven by significant customer deposits received and cash conversion of receivables.

Investing activities

We had no cash flows driven by investing activities during 2019.

Financing activities

We have negative $779 thousand net cash from financing activities in the current period, compared to negative net cash from financing activities of $70 thousand in the comparable prior period. In 2019, we made repayments on our IMT promissory notes, Crocus loan and included payments of $563 thousand on lease liabilities, with the adoption of the new accounting standard. In 2018, we received additional funding from WEDC and we borrowed from our revolving line of credit with the Chymiak Trust to fund working capital requirements. We also made repayments on our long-term debt and IMT promissory notes in 2018.

Working Capital Ratio

Novra's working capital ratio was as follows:

		December 31, 2019		December 31, 2018
Working Capital:				
Current assets	**$**	**5,950**	$	8,110
Current liabilities		**5,001**		5,691
Working capital	**$**	**950**	$	2,419
Working capital, excluding related party and deferred revenue balances	**$**	**3,599**	$	5,143
Working capital ratio[(1)]		**2.53:1**		2.73:1

(1) Total current assets over total current liabilities, excluding amounts due to related parties and deferred revenue

"Working capital, excluding related party and deferred revenue balances" and "Working capital ratio" as defined above are both non-IFRS financial measures. Management believes these are useful, relevant financial measures to investors and other stakeholders in order to assess the available working capital to fund Novra's day-to-day operations.

Working capital decreased to $950 thousand at December 31, 2019, from $2.4 million at December 31, 2018. Excluding related party and deferred revenue balances, Novra's working capital decreased to $3.6 million at December 31, 2019, from $5.1 million at December 31, 2018. Our working capital ratio (as defined above) remained healthy at 2.53:1 or $2.53 per $1.00 of current liabilities at December 31, 2019.

Contractual obligations and commitments

At December 31, 2019, Novra's contractual obligations and commitments were as follows:

Payment due:		**Total**		**Within 1 year**		**1 to 3 years**		**3 to 5 years**		**5 to 10 years**
Borrowings (Note 11)	**$**	**2,443**	$	102	$	153	$	890	$	1,298
Operating leases (Note 21)		**3,254**		560		925		498		1,271
Purchase commitments (Note 21)		**71**		71		-		-		-
Trade payables and other payables		**483**		483		-		-		-
Total third party contractual obligations		**6,251**		1,216		1,078		1,388		2,569
Promissory notes from related party (Note 19)		**920**		775		145		-		-
Advances from related parties (Note 19)		**785**		785		-		-		-
Total contractual obligations	**$**	**7,956**	**$**	**2,776**	**$**	**1,223**	**$**	**1,388**	**$**	**2,569**

See Consolidated Financial Statements notes for further details.

Based on the December 31, 2019 liquid assets (as defined above) and working capital, we have sufficient liquid resources to fund all third party contractual obligations coming due in 2020.

CAPITAL RESOURCES

Our key objectives and policies for managing capital are to maintain a strong capital base in order to:

- maintain investor, creditor and market confidence;
- advance Novra's corporate strategies to generate attractive risk-adjusted return over the long-term for our shareholders;
- sustain Novra's operations and growth through all cycles; and

- ensure compliance with the covenants of any applicable credit facility and other financing facilities.

As at December 31, 2019, the Company had cash and cash equivalents of $3.1 million and access to an undrawn revolving facility (the RBC Credit Facilities as described in Note 11 of the Consolidated Financial Statements), subject to the terms and conditions of the credit facilities.

At the date of this MD&A we continue to have access to these facilities and no amounts are outstanding.

At December 31, 2019 and 2018, Novra's total outstanding voting common shares were 33,372,307 and 33,345,375, respectively. Our debt and equity positions at December 31st were as follows:

	December 31, 2019	December 31, 2018
Borrowings (drawn)	**$ 2,443**	$ 2,709
Promissory notes from related party	**920**	977
Equity attributable to shareholders of Novra	**70**	1,697
Total	**$ 3,433**	$ 5,383

The change in capital resources, including cash and equity, during 2019 was primarily due to net losses for the year.

Management believes the Company's current cash, access to the undrawn portion of debt facilities and its access to additional financing in the form of debt or equity will be sufficient to meet its working capital and capital expenditure requirements for the foreseeable future, including its contractual obligations and the commitments noted above.

OFF BALANCE SHEET ARRANGEMENTS

At December 31, 2019, and 2018, we had no off-balance sheet arrangements.

TRANSACTIONS WITH RELATED PARTIES

In addition to key management personnel compensation, we have material unsecured promissory notes with IMT (IMT is a shareholder and our President & CEO has a controlling interest in IMT) as disclosed in the "Liquidity" and "Capital Resources" sections of this MD&A. Refer to Note 19 of the Consolidated Financial Statements for a complete disclosure of all related party transactions, including amounts due on demand.

ACCOUNTING MATTERS

Critical Accounting Estimates

The Consolidated Financial Statements include certain amounts that are inherently uncertain and judgmental in nature. As a result, management is required to make assumptions and best estimates in order to determine the reported values. We consider an accounting estimate to be critical if: (1) it requires that significant assumptions be made in order to deal with uncertainties; and (2) changes in the estimate could have a material impact on our results of operations, financial condition or liquidity.

We believe that the material items requiring such subjective and complex estimates are as follows:

- Revenue recognition
- Inventory obsolescence

- Business combinations
- Impairment of non-financial assets

Refer to Note 3 of the Consolidated Financial Statements for further details.

We believe that the amounts included in these financial statements reflect management's best judgment. However, factors including, without limitation, those noted under "Risks and Uncertainties" below could cause actual events or results to differ materially from our underlying assumptions and estimates. Accordingly, this could lead to a material adverse impact on our results of operations, financial condition and/or liquidity.

New Accounting Standards

On January 1, 2019, we adopted the new accounting standard:

- IFRS 16 – Leases

The adoption of this new accounting standard did not impact operating performance or internal accounting processes and procedures. Refer to Note 2 of the Consolidated Financial Statements for further details on this new accounting standard.

FINANCIAL INSTRUMENTS AND OTHER INSTRUMENTS

Refer to Note 5 of the Consolidated Financial Statements for disclosure relating to Novra's financial instruments and financial risk management objectives and policies.

RISKS AND UNCERTAINTIES

The risks and uncertainties below are not the only ones facing Novra. Additional risk and uncertainties not presently known to us or that we currently consider immaterial may also impair Novra's business operations and cause the price of Novra's common shares to decline. If any of the following risks occur, Novra's business may be harmed and its financial condition and results of operations may suffer significantly. In that event, the trading price of Novra's common shares could decline, and an investor may lose all or part of his, her or its investment. Accordingly, potential investors are strongly recommended to consult an independent financial advisor before deciding to invest in Novra.

COVID-19 Advisory: Since December 31, 2019, the outbreak of the novel strain of coronavirus, specifically identified as "COVID-19", has resulted in a widespread health crisis that has affected economies and financial markets around the world resulting in an economic downturn. This outbreak may also cause staff shortages, reduced customer demand, a rise in customer delinquency and increased government regulations or interventions, all of which may negatively impact the business, financial condition or results of operations of the Company. The duration and impact of the COVID-19 outbreak is unknown at this time and it is not possible to reliably estimate the length and severity of these developments.

- We rely on a small number of customers for a large percentage of our revenue. Accordingly, our quarterly revenue and operating results can be difficult to predict and can fluctuate materially, which may negatively impact Novra's results of operations.
- We may not timely identify emerging technology and market trends, enhance our existing technologies or develop new technologies to effectively compete in the multimedia broadband content distribution business.
- We face significant competition from several competitors and if we do not compete effectively with these competitors, our revenue may not grow and could decline.

- Our RBC credit facilities agreement is subject to annual review. There is no assurance RBC will renew the existing credit facilities in 2020.
- Historically, we have relied significantly on a related party (IMT) for new capital. There is no assurance that IMT will participate in future capital funding activities.
- We may engage in future acquisitions that could disrupt our business, cause dilution to our shareholders and/or negatively impact Novra's financial condition and operating results.
- Failure to manage Novra's growth successfully, including integration of acquired companies, may adversely impact Novra's operating results.
- The industry in which we operate is subject to rapid technological changes, and our continued success will depend upon our ability to react to such changes and having the financial resources to continue developing innovative products. Additionally, rapid technological changes may lead to material inventory obsolescence if we fail to manage effectively our inventory holdings.
- We have limited intellectual property protection for our product solutions.
- Discontinued third party components and defects in components or design of Novra's product solutions could result in significant costs to Novra and could impair our ability to sell existing product solutions.
- We rely on limited contract manufacturers for our product solutions. This could result in increases to costs or lead-times outside of our control.
- Our ability to recruit and retain key personnel is crucial to our ability to develop, market, sell and support our products and services.
- A substantial portion of Novra's revenues and expenses is denominated in U.S. dollar and Euro currencies and therefore we are exposed to significant currency risk. Failing to actively manage currency risk may negatively impact Novra's operating results.
- We are exposed to significant customer credit risk, particularly as the majority of our business is with foreign customers, which could lead to significant impairment charges.
- We may have unintentionally infringed on the intellectual property rights of others without appropriate licensing arrangement in place, which could lead to litigation and significant costs to Novra.
- We rely on resellers and distributors to complement our small sales team to drive future sales growth.
- Economic and geopolitical uncertainty may negatively affect our ability to grow sales.
- Depending on Wegener's financial performance, we may further delay or abandon the acquisition of the remaining 49% of Wegener. Also, there can be no guarantee that Wegener shareholders will approve eventual acquisition of the remaining 49%.