novra TECHNOLOGIES INC.

MANAGEMENT'S DISCUSSION & ANALYSIS

Years ended December 31, 2022 and 2021
(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 Consolidated Financial Statements for the periods ended December 31, 2022 and 2021, and related notes included therein (the "Consolidated Financial Statements"). These 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 May 1, 2023 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 May 1, 2023.

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 48.4% 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 "expect", "anticipates", "believes", "intends", "estimates", "predicts", "potential", "promising", "targeted", "plans" "possible", "position for", "prepare for" 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"), which trades under the stock symbol NVI. Novra is also listed in the United States on the OTCQB Venture Exchange, under the symbol NVRVF. Novra owns International Datacasting Corporation ("IDC") based in Ottawa, Canada, as well as controlling interest in Wegener Corporation ("Wegener"), based in Atlanta GA. Both are long-time leaders in multimedia broadband distribution infrastructure. Together they make up the Novra group of companies ("Novra Group"). For more background see the website at www.novragroup.com.

Novra is a global business with customers on every continent. We provide technology for distribution of broadband data via satellite and IP networks with a specialization in broadcast media. The Novra Group companies offer a comprehensive portfolio of products, systems, and services. Products include hardware and software tailored for advanced applications in key vertical markets: video, radio, and data distribution, digital cinema and digital signage. Areas of expertise and added value include: encryption, next-generation hybrid networks (satellite/terrestrial/cloud), and efficient bandwidth utilization.

About our business

The media distribution landscape is going through major upheaval driven by a combination of market and technology factors. Important changes include:

- **Content is changing.** With the explosion of streaming media—video and audio—long form content, limited series, live vs on-demand, the demand for media is growing and evolving.

- **Revenue models are changing.** Advertising can be much more precisely targeted. New subscription models are emerging. Licensing and underwriting practices are changing. Content is being accessed in more granular models (e.g., through specific apps vs bouquets of live channels).

- **Distribution platforms and architectures are changing.** The legacy model of distribution of channel-based media as a broadcast via satellite-"point to multipoint"- is evolving into a bandwidth intensive hybrid satellite/internet model.

These changes are happening fast and networks are looking for infrastructure that can support these changes, infrastructure that is adaptable and upgradeable. This means a move away from hardware intensive platforms requiring "forklift upgrades" every few years, to software-centric appliances that are scalable, flexible, and cost-effective. We are focused on providing the technology and expertise to meet this paradigm shift.

Keeping up with the changes: designing for today and tomorrow

Our business strategy has to address the current needs of our customers and key markets while steering in the direction of new models and new opportunities.

- **Targeting the applications and geographical markets where satellite technology still thrives** including government applications (communications, weather, defense) in North America and around the world, international markets where geographical population distribution is wide and availability of terrestrial broadband is low (such as Latin America and Australia), as well as longtime customers with legacy networks that continue to evolve and grow.

- **Diversifying into hybrid and IP distribution where we have competitive advantages and see opportunity.** All of our products support satellite and IP distribution and are designed for maximum interoperability.

- **Addressing our customers' need for migration strategies**—we are "cloud-ready" with the hardware and software products networks need, as well as systems expertise. We partner with our customers to help them decide whether, when, and how to migrate their systems.

Smart products:

We are taking innovative initiatives to improve functionality, reduce costs, and open new markets for our products:

- We have been pioneers in cloud delivery for broadcasters. Our **MISTiQ** managed cloud solution for broadcasters is now in its third generation. It's a mature, proven platform that allows broadcasters (radio and/or video) to use the internet for backup/redundancy, to expand their reach beyond the satellite footprint, even to migrate completely to internet delivery.

  The internet is an inhospitable environment for broadcasting which requires low-latency and reliable timing. MISTiQ uses aggressive strategies for mitigating the challenges of this environment and provides extremely low-latency and high availability. MISTiQ 3 has been upgraded to a containerized microservices architecture for increased scalability and features expanded monitoring tools—to give customers more visibility and control over their data.

- We also are integrating and consolidating various product lines and models into our **MAP** series. MAP stands for Modular Architecture Platform—the design philosophy is to make a resilient, reliable hardware platform and customize/adapt it to particular vertical markets. For example, MAP Pro Audio has professional balance audio outputs, MAP Pro Cinema has expanded on-board storage for very large files, MAP Pro Video has specialized video outputs. By using common elements we reduce the time to market, inventory requirements, and are in a better position to manage ongoing supply chain challenges.

- We continue to lead the market in IP Encapsulation and encryption solutions, as well as lifecycle support for mission-critical networks.

Our business focus: We are leaders in an important market niche—mission-critical professional networks that require rapid, ultra-reliable content delivery, whether for a live on-air broadcast, urgent secure defence data, the latest Hollywood blockbuster, or encrypted block chain data. Our core product lines are applicable across a range of vertical markets. This allows us to focus on maintaining a diversified business base. Our target vertical markets 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, including ongoing 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)
  - Delivery of live and file-based video content distribution
  - Digital signage
  - IPTV
  - Professional-quality streaming video

- *Broadcast Radio:* We are a leading global provider of turnkey infrastructure solutions for 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 long-established and respected product lines as well as innovative new products recently released for this market.

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

- *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. This product line enables 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 receivers provide standalone communication gateways to local networks or have been integrated into a wide range of purpose-built appliances.

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 international network of reseller partners and, of course, our clients. These close customer relationships give us important market insights that, combined with our extensive engineering experience, form the foundation for our continuing development of advanced products and flexible solutions.

OVERALL PERFORMANCE

While Novra's Q1 results were disappointing, performance steadily improved after a significant loss in the first quarter. There was also year-over-year improvement in our sales, our gross profit and our operating income. Our 2021's net income was higher only because it includes over $1.0 million in Covid-related government assistance.

Transportation and component lead-time challenges, resulting from the global geo-political and public health situations that continued to effect global supply chains in 2022, caused extended delivery times for some custom and high-volume orders. This resulted in lower than usual shipments in the first quarter, despite the significant order backlog we brought into the year. Although shipments ramped up in the remainder of the year, we were still not able to deliver all of our 2022 backlog. The ramp up is shipments is reflected in significantly higher revenue and improved financial results for the most recent quarters. Net income profit was achieved in each of the final two quarters. However, this improvement was not sufficient to fully compensate for Q1 loses.

While Novra's full year net income was a loss of $474 thousand, this loss can be fully attributed to the amortization of $596 of the intangible assets related to the 2017 acquisition of 51.4% of Wegener. As of the end of 2022 these intangible assets have been fully amortized and therefore no related expense will be incurred in future years. All other things being equal, without this expense Novra would have achieved Net Income profit in 2022.

When comparing our 2022 vs 2021 financial results, it's important to keep in mind that in 2021 we received over $1.0 million from the US and Canadian governments in Covid supports, while in 2022 we received only $9 thousand. This assistance is reported as finance income and had a significant positive effected on net income for 2021. Operating income, which does not include this funding, improved by $251 thousand 2022 over 2021 (2022 – operating income loss of $419 thousand, 2021 – loss of $670 thousand).

Improvements in some component lead-times and our product inventory levels in the second half of 2022 allowed us to clear a significant portion of our existing backlog and ship many of our new orders from stock. This resulted in a lower order backlog coming out of 2022 compared to 2021. Even so, Novra's deferred revenue and bookings backlog remained significant at more than $3.5 million as of December 31, 2022. These provide some visibility into future revenue. We continue to invest prudently in inventory so that we can ship many orders of standard products from stock, with very short lead-times.

We are seeing pent up demand in our markets. Infrastructure replacements will be necessary due to technology obsolescence, aging equipment and new business requirements. However, this is countered by the economic uncertainty, rising interest rates and contracting availability of capital that are leading businesses to delay investments in their infrastructures. The effect of this is seen in our shrinking order backlog. While we are confident that opportunities exist and we are taking the right steps to be ready when customers decide to buy, we cannot know when the pent-up demand will turn into orders. We are therefore continuing to aggressively manage expenses and will continue to take any necessary steps to adjust expenditures in order to address this uncertainty.

In adapting to these evolving market dynamics, management has taken targeted actions, including implementing specific cost saving measures. This cost-saving focus will continue in 2023 and we expect to achieve 10% to 15% reduction in our operating costs, largely as a result of the rightsizing of our facilities' footprints that we've already completed, which has reduced our occupancy costs going forward. Our investments in technology and other operational efficiencies have enabled us to work more productively in less space. At the same time, we continue to invest in focused innovation initiatives and building customer relationships to address current customer needs and position Novra for future growth.

The financial highlights for Q4 and the full year shown below are derived from our Consolidated Financial Statements and include consolidation of Novra's subsidiaries; International Datacasting Corporation and Wegener Corporation (51.6% controlling interest).

Q4 2022 vs. Q4 2021:

- Revenue was $2.2 million in Q4 2022, compared to $1.5 million in Q4 2021, an increase of $686 thousand. This increase is largely the result of higher shipments of backlogged orders.
- In Q4 2022, gross profit was $1.6 million, representing 73.7% of total revenue, compared to $569 thousand, which was 37.7%. The unusually high gross profit percentage in Q4 2022 was due to a favourable product service mix and the timing of certain expenses. In contrast, and 2021's gross profit percentage was unusually low due to certain fixed expenses being offset against lower revenue.
- Operating expenses were $1.2 million, compared to $279 thousand in 2021, Operating expenses in Q4 2022 were unusually high due, in large part, to certain one-time expenses associated with reducing on-going occupancy costs. In Q4 2021, operating expenses were unusually low as a result of capitalizing some R&D expenses incurred throughout the year.*
- Net Income was $363 thousand, compared to an income of $227 thousand in Q4 2021. This improvement was driven by higher revenue and improved gross margin percentage.
- Adjusted EBITDA** was $653 thousand, compared to Adjusted EBITDA** of $594 thousand.

Full Year 2022 vs. 2021:

- Total revenue was $7.6 million, compared to $7.2 million, an increase of $399 thousand.
- Gross profit at $4.1 million was 54.4% of total revenue, compared to $3.3 million or 46.2%, an increase of 8.2%, which is primarily attributable to a change in product service mix.
- Operating expenses were $4.5 million, compared to $4.0 million, an increase of 14%. While operating expenses were down significantly for the remainder of the year, offsetting one-time adjustments in Q4 of each year resulted in higher operating expenses for the current year*.
- Our consolidated net income loss was $474 thousand, compared to income of $180 thousand in 2021. The significant majority of the 2022 loss was incurred in Q1. This measure improved significantly for Q2 and returned to positive income for the two most recent quarters. In 2021, Net Income was significantly impacted by $1.0 million in government support related to COVID-19. These support programs were largely phased out by 2022.
- Adjusted EBITDA** of $884 thousand, compared to Adjusted EBITDA** of $1.5 million.

* Operating expenses in 2021 and 2022 were affected by the move to begin capitalizing certain development costs at the end of 2021. Refer to the Operating Expenses section for further discussion of this change.

**Adjusted EBITDA is a non-IFRS financial measure. Adjusted EBITDA provides an important financial measure of Novra's operating performance, allowing comparison of core operating results from period to period. Refer to the "EBITDA and Adjusted EBITDA" section below for details regarding calculation of this non-IFRS measure.

Our ongoing drive to realize synergies and efficiencies across the group resulted in a reduction in on-going consolidated operating expenses, which was seen in the first three quarters of 2022. However, increased sales and marketing expenses to support future sales and significant one-time expenses that were incurred in Q4 have more than off-set those savings for the year as a whole. We feel these investments made in 2022 will result in associated future sales opportunities and cost savings. We will continue to actively control and adjust operating expenses in response to company performance and current volatile market conditions.

Results and Outlook

The effects of the COVID-19 pandemic and Russia's on-going invasion of Ukraine continue to generate global geopolitical turmoil. While the negative affect on supply chains has dampened in recent months, distributor inventories remain tight, price increases are continuing and lead-times on certain electronic components are stretching to many months. In addition, economic uncertainty and increasing interest rates are causing companies to delay large capital purchases. All of these put downward pressure on 2022 revenue and Gross Profit. Novra's adaptive strategy to deal with these challenges focuses on strategic inventory purchases, including advance purchasing of certain key components, and nurturing additional procurement channels, to ensure we are positioned well to respond to customer needs when they make the decision to purchase.

Our clients continue to navigate and adapt through these challenging circumstances to ensure operational reliability of their networks. We play a major part in helping them to achieve their goals by providing expert support services and powerful new products, which enhance their networks and enable a more reliable service to their customers. Their continued confidence in choosing our products and services is reflected in our recent bookings and our identified sales opportunities for the year ahead. These demonstrate the importance our customers, even in times of global uncertainty, place on investment in the critical infrastructure components that Novra provides. We continue to pride ourselves on being a partner to our customers, there to support them in trying times as well as in times of exciting growth.

Our targeted sales efforts and with our client-centric R&D activities have resulted in recent releases of several new products which have now been selected for new project rollouts, and we are starting to receive more of those orders. We continue to be flexible in our product development, with an eye on technological trends and new communications standards, to ensure our products remain relevant throughout their life cycle and provide a valued investment to our clients.

An important component of our R&D strategy over the last three years has been the continued development of the MISTiQ platform for cloud-based distribution of content. We are also expanding our software products—including the Datacast XD content management and distribution—into the Software as a Service (SaaS) model. This recurring-revenue model is increasingly popular with customers who don't have to invest upfront in software, and it's part of our ongoing strategic goal of generating a more consistent revenue base. In a project-based business like Novra's this offers the advantage of smoothing out inconsistent revenues. The work we've done and our substantial R&D investment over the past several years is paying off as we book more and more service business.

Highlights of 2022

Despite the challenges of on-going global supply chain disruptions, inflation, higher interest rates and overall economic uncertainty, we saw positive indicators across our various market verticals in 2022:

- We are pleased to see that service contract renewals for both government and commercial projects are strong as customers continue to rely on us to support the full lifecycle of their networks. This is a both a significant contributor to our professional services business and an indication of our strong long-term relationships with customers.
- We received a new order for an on-going rollout of product for a major US faith-based broadcaster/content distributor. For this customer we provide the robust MAP Pro Audio hardware and partner with them to integrate the software they've developed in-house, tailored to their own particular delivery model. This is the kind of collaboration in which we excel.
- We are seeing a great deal of interest in our MISTiQ hybrid IP/satellite delivery technology, as networks around the world continue to seek alternatives to reduce costs, improve reliability, and expand their reach. This includes expansion of existing MISTiQ customer deployments, and three more new networks adopting MISTiQ for service distribution.
- A major digital cinema customer placed a sizable order, expanding their existing network. This is a positive indication of confidence in our products/solution, as well a good sign of growth as cinema chains bounce back.
- We continue to enjoy robust follow-on orders as well as new opportunities from long-time government customers as they grow and/or upgrade existing networks. These include:
  - New orders for a long-time COTS video distribution service.
  - Ongoing orders for Novra weather data receivers. There is strong interest in our next generation data receiver—the S401—designed to support next-generation weather satellites from NOAA and Eumetsat and their advanced requirements including dual tuners, increased speeds, and new protocols.
- We received a major follow-on order for a customized health and well-being channel distributed via private healthcare networks. This order is significant due to its larger than usual size and represents

a committed strategy by the client to upgrade their current technology and to expand their network using our solution. We expect this will be a multiyear project with orders over the next 2 to 3 years.

- We booked a significant large digital signage order for another major banking network in Latin America through a long-time service provider customer/partner. The project will include Wegener's Signcaster 864 product, with the enhanced secure connectivity features required for banking environments. We expect to begin shipments for this order in Q4 and to complete it in the first half of 2023.
- Radio business continues strong:
  - In Australia two long-time customers placed orders to refresh their networks, adopting the latest MAP Pro Audio
  - We are seeing a lot of activity with faith-based broadcasters in the US including MAP Pro Audio orders from a new customer migrating from an obsolete competitive product, and another long-time customer refreshing their network to the latest and greatest receiver platform.
  - We are pleased to be working with Link-up Communications to help their user community migrate from Comstream/ABR and other obsolete technologies/companies. We make this process easy, providing one-stop shopping and turnkey network services.
  - We continue to see orders from existing customers in Latin America and Europe. We received a sizable order for a long-time customer in Europe that is expanding their network.
  - We got another major order from a large broadcast customer in Canada that is adding 16 channels to their network and ordering next-generation MAP receivers as they migrate to the latest technology.
  - Radio network customers, from South Sudan to Papua New Guinea and New Zealand, continue to adopt MAP receivers as their new platform of choice.
  - We are seeing an increased demand in the US market for products with our premium Audiocaster Pro feature set, including program-based, user-friendly radio distribution management tools. We are responding by moving quickly to launch a new version of the Audiocaster Pro tailored to meet the needs of a much broader user base.
- We received our largest order to date from Blockstream, for secure distribution of blockchain data via satellite. We are the exclusive providers of receivers used in their "Satellite Pro Kit" professional solution.

Beginnings of 2023

This year we see many ongoing customers taking steps to refresh and/or expand their networks. Many are looking for new features in our products, which informs our technology enhancements going forward.

- We received a sizeable order to upgrade encryption technology for major US government broadcast service. We are the ongoing provider for this long-term program supplying decryption integrated into our satellite receivers as well as desktop client licenses. We are in the process of releasing a next-generation satellite receiver for this program in order to support ongoing lifecycle refresh requirements. This program also drives multiple business opportunities for software, receiver hardware appliances, IP Encapsulators, and ongoing support.

- We received an order from Eastern European national radio broadcast network for an additional uplink to mitigate risk to their redundant uplinks caused by the current war in Ukraine.

- We received a follow-on order from Grupo Imagen, a major television network in Mexico, to expand its encryption infrastructure to support broadcast of Major League Baseball.

- We received a follow-on order from a digital signage/enterprise video network in the health care sector that is adding new channels based on our next-generation Signcaster Pro

- Orders for support contract renewals and equipment to maintain and grow existing networks—across all vertical markets and sectors including government and commercial clients—are strong as we support our customers in maintaining long-term sustainable networks.

We believe repeat customers like these reflect the quality of the solutions we've provided to them in the past, the value of the on-going customer support that we deliver, and an endorsement of the technical advancements we've made in newer-generation products.

This year we have a great deal of activity in refreshing products and networks to meet emerging technical and business opportunities. This includes shifting to IP and hybrid satellite networks.

- We received an order from a major Canadian commercial television broadcaster for MISTiQ cloud service and equipment. This strategically important order is for broadcast radio contribution, the link from the studio to transmitter is an expansion from our typical distribution business.

- Our MISTiQ cloud for broadcaster IP distribution technology is being more broadly adopted by broadcasters. We have expanded our global Points of Presence for the network infrastructure we offer as a service and we are rolling out MISTiQ 3 to support growth and ease-of-use.

We continue to integrate and improve our product lines—adding new features and new capabilities—to address increasing opportunities to grow market share in key vertical markets. We also continue to push forward on our corporate vision to bring together great companies with complementary technologies to capitalize on both existing and new market opportunities. Our new products have integrated features and a consistent "look and feel", communicating to the market (including long-time customers) that we are a strong, unified company. We have successfully consolidated, integrated, and refocused our engineering efforts to provide world-class leading-edge products and services to our clients.

Through this process Novra has evolved significantly into a strong, scalable, global company oriented to the growing multimedia broadband content distribution business. We are focused on meeting the needs of our clients, who are looking for flexible, cost-effective solutions. Our product development is centred on listening and responding to identified client requirements as well as anticipating next-generation innovations. More and more, our hardware is becoming a platform for increasingly powerful and sophisticated software—bringing agility, forward compatibility, and longevity to the lifespan of our products.

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		
	2022	2021	% Chg	**2022**	2021	% Chg
Revenue by type:						
Products	**$ 1,586**	$ 1,025	55%	**$ 5,853**	$ 5,606	4%
Services	**609**	484	26%	**1,750**	1,600	9%
Total revenue	**2,195**	1,509	45%	**7,603**	7,206	6%
Gross profit	**1,618**	569	184%	**4,135**	3,329	24%
Gross margin	***73.7%***	*37.7%*	95%	***54.4%***	*46.2%*	
Operating expenses	**1,234**	279	342%	**4,554**	3,999	14%
Operating income (loss)	**384**	290	32%	**(419)**	(670)	-38%
Other income (expenses)	**(21)**	(62)	-66%	**(55)**	850	NM
Net income (loss) as reported under IFRS	**$ 363**	$ 227	60%	**$ (474)**	$ 180	NM
Adjustments:						
Finance costs	**- 1**	32	NM	**166**	177	-6%
Depreciation and amortization	**309**	283	9%	**1,290**	1,132	14%
EBITDA - non-IFRS measure	**670**	542	24%	**982**	1,489	-34%
Loss (gain) on foreign exchange	**(18)**	52	NM	**(98)**	5	NM
Share-based compensation	**-**	-	NM	**-**	-	NM
Adjusted EBITDA - non-IFRS measure	**$ 653**	$ 594	10%	**$ 884**	$ 1,494	-41%

NM – Not meaningful

*EBITDA and Adjusted EBITDA are non-IFRS financial measures. EBITDA and Adjusted EBITDA provide an important financial measure of Novra's operating performance, allowing comparison of core operating results from period to period. Refer to the "EBITDA and Adjusted EBITDA" section below for details regarding calculation of this non-IFRS measure.

Revenue and Gross Margin

Total revenue for the 12-month reporting period increased to $7.6 million (2021 - $7.2 million). Gross margin was 54.4% for the reporting period, 8.2% higher than in 2021. The increase in gross margin was primarily a result of differences in product/service mix and price adjustments we made in response to increased costs (which had depressed margins in 2021).

For the year ended December 31, 2022, our top 10 customers accounted 56.2% of total revenue with the largest accounting for 46% or $3.4 million. For the same period last year Novra's Top 10 customers accounted for 66.3% of total revenue with the two largest accounting for 31% and 8% respectively or $2.8 million in aggregate. No other customer accounted for more than 10% of total revenue. The Company continually monitors its revenue concentration risk and seeks to diversify its customer base.

While our revenue may be concentrated with 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 base. The following table summarizes the geographic distribution of our revenues for the period.

	Three Months Ended December 31		Year Ended December 31	
Geographic Market	**2022**	2021	**2022**	2021
Americas (excluding Canada)	**$ 1,943**	$ 1,267	**$ 6,352**	$ 5,416
Canada	**64**	82	**490**	434
EMEA	**67**	96	**321**	462
APAC	**121**	63	**440**	893
	$ 2,195	$ 1,508	**$ 7,603**	$ 7,205

Operating Expenses

(In thousands)	Three Months Ended December 31			Year Ended December 31		
	2022	2021	% Chg	**2022**	2021	% Chg
General and administrative ("G&A")	**585**	137	327%	**1,347**	1,119	20%
Sales and marketing ("S&M")	**213**	82	159%	**947**	789	20%
Research and development ("R&D")	**437**	60	628%	**2,260**	2,091	8%
Total operating expenses	**1,235**	279	343%	**4,554**	3,999	14%

Total OPEX during the 2022 year increased 14% from the comparable period in 2021. This increase is fully confined to the Q4 comparison (operating expenses were down 11% for the first three quarters of 2022 compared to the same period in 2021). This Q4 increase was primarily the result of one-time costs related to our moves to significantly reduce on-going occupancy costs and to one-time adjustments that reduced reported operating expense for 2021 Q4. For financial reporting purposes, we allocate facility-related 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, along with certain general facilities-related costs. These costs increased to $1.3 million in 2022 (2021 – $1.1 million). This increase is largely attributable to one-time costs late in the year related to our moves to significantly reduce occupancy costs going forward. The comparison is also affected by reduced G&A expenses in Q4 of 2021 as a result of one-time adjustments in that period.

Our Sales and Marketing ("S&M") costs consist of compensation paid to our sales team, as well as tradeshow, promotion, and travel & entertainment costs. We increased our marketing expense by 20% to $947 thousand (2021 - $789 thousand). The increase was primarily driven by increased compensation and travel-related costs.

Research and Development ("R&D") costs will continue to be a significant component of our total operating expenses as we continue to develop innovative products and solutions to remain competitive in our industry. R&D costs include primarily compensation paid to engineering personnel and prototype costs. Notably, expenses related to amortization of intangible assets from acquisition of controlling interest in Wegener are also included in R&D costs. This amortization of $586 thousand in 2022 ($574 thousand in 2021) distorts our R&D expenditures as a percentage of revenue and it has an impact on our net operating results. As of December 31, 2022, the acquisition-related intangible assets are now fully amortized, so this expense will not continue into future periods.

In periods before the year ended December 31, 2021, R&D product development costs were expensed as incurred; we did not capitalize development costs. Because of this, no capital asset related to our internal investments in developing products and technologies was previously included in our consolidated statement of financial position. With continued significant development being invested in products and technologies that have extended useful lives, Novra made the decision in Q4 of 2021 to begin capitalizing certain development costs to more appropriately present our technology assets and R&D expenses. This change was made retroactively to applicable development costs starting January 1, 2021 and resulted in reporting of extremely low R&D expenses in the fourth quarter of 2021. This change increased the Intangible Assets reported on the Consolidated Statement of Financial Position.

Beginning in 2022, certain new development costs have continued to be capitalized. At the same time, amortization of these development assets over their useful lives is included in Operating Expenses. In 2022, $129 thousand in amortization of previously capitalized R&D was expensed (2021 - $nil). Novra will continue to invest strategically in product development to position the company for future success.

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, many 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 Consolidated Financial Position; the impact of which is reported as a foreign exchange gain or loss.

For the 2022 year-end Novra had a foreign exchange gain of $98 thousand, compared to a loss of $5 thousand in 2021.

At December 31, 2022, the foreign currency denominated assets and liabilities, subject to remeasurement, are as follows:

(in thousands)	**USD**	**Euro**
Assets	2,247	48
Liabilities	(1,303)	25
Net assets before hedging	944	73
Currency derivative contracts	-	-
Net assets - unhedged	944	73
Impact on Novra's earnings if 5% change in foreign exchange rate:	47	4

If on December 31, 2022, the Canadian dollar had weakened or strengthened by 5% against the U.S. dollar and Euro, with all other variables held constant, Novra's consolidated net loss would have been impacted by $47 thousand. Please note that this calculation excludes Wegener's assets and liabilities, which are denominated in USD.

Other Income and Finance Costs

The Company qualified for the Canada Recovery Hiring Program (CRHP) during the twelve months ended December 31, 2022 and recorded $9 thousand to finance income. This is a federal government program created to provide financial support to businesses affected by COVID-19.

Finance costs were $166 thousand for 2022, a slight decrease from last year (2021 – $177 thousand). There were no bank borrowings on our RBC credit facilities in 2022.

Depreciation and Amortization

Depreciation and amortization costs increased to $1.29 million for the twelve months of 2022 (2021 - $1.13 million). This includes intangible asset amortization of $725 thousand (2021 - $574 thousand) and $548 thousand in amortization of right-of-use assets (2021 - $528 thousand). The intangible asset amortization in 2022 includes $129 thousand in amortization of capitalized development costs. Specific development costs were first capitalized at the end of 2021 and therefore periods in 2022 are the first where amortization expenses related to these have been recorded.

Tax Expense

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

Despite the significant non-capital loss carry forwards and available investment tax credits (see Note 14 of the audited Consolidated Financial Statements) to shelter future taxable income from income taxes, we have not recognized deferred tax assets at either December 31, 2022 or 2021 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 competitive environment 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, financing costs (interest), 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.*

EBITDA was a gain of $670 thousand for the 3 months ended December 31, 2022 compared to $542 thousand for the same period in 2021. For the full year, EBITDA was $982 thousand in 2022 compared to $1.5 million in 2021. Adjusted EBITDA for the year 2022 was $884 thousand, while it was a $1.5 million for 2021. The decrease in full year EBITDA and Adjusted EBITDA was primarily driven by reduced finance income, as a result of the government assistance provided in 2021 in response to the COVID-19 pandemic being largely phased out in 2022. If the effect of the more than $1.0 million differential in this assistance year over year was removed, 2022 EBITDA and Adjusted EBITDA would have been significantly higher than the prior year.

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 prior quarters.

(In thousands of dollars, except with respect to earnings (loss) per share	**Dec 31, 2022**	Sep 30, 2022	Jun 30, 2022	Mar 31, 2022	**Dec 31, 2021**	Sep 30, 2021	Jun 30, 2021	Mar 31, 2021	**Dec 31, 2020**
Revenue	**$ 2,195**	$ 2,141	$ 2,338	$ 929	**$ 1,509**	$ 891	$ 1,078	$ 3,728	**$ 1,675**
Gross profit	**1,618**	999	1170	348	**569**	192.608	404	2164	**631**
Operating expenses	**1,234**	1,008	1228	1082	**279**	1184.695	1345	1190	**1,201**
Foreign exchange gain (loss)	**18**	29	8	43	**(52)**	17	(90)	120	**260**
Net income (loss) attributable to Novra	**200**	(234)	(230)	(643)	**264**	(710)	(432)	759	**(749)**
Adjusted EBITDA Income (loss)	**653**	362	274	(405)	**594**	(380)	(57)	1,338	**(116)**
Earnings (loss) per share - diluted	**$ 0.006**	$ (0.007)	$ (0.007)	$ (0.019)	**$ 0.008**	$ (0.021)	$ (0.013)	$ 0.023	**$ (0.022)**
Weighted average shares outstanding	**33,420**	33,420	33,420	33,396	**33,396**	33,396	33,396	33,396	**33,396**

We occasionally receive large orders from customers and partners that 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. Novra had considerable deferred revenue and a backlog of orders received, but not yet shipped, at December 31, 2022. However, our backlog was lower compared to December 31, 2021, because more previously backlogged orders were shipped than were added to backlog.

We continue to expect significant volatility in revenue from quarter to quarter due to particular timing of orders from existing customers, continued economic and supply chain 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 , on-going global geopolitical disruptions, higher interest rates and economic challenges to continue to impact markets and economies and therefore our customers and our business (refer to the Risks and Uncertainties section below).

LIQUIDITY

<u>Quick Ratio</u>

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, certain cashable guaranteed investment certificates (GICs) and accounts receivable. The following table shows our total liquid assets at the following reporting dates.

	December 31, 2022	December 31, 2021
Cash	**$ 1,966**	$ 2,965
Guaranteed investment certificates	**$ 1,354**	$ -
Accounts receivable	**698**	1,124
Total liquid assets	**$ 4,018**	$ 4,089
Quick ratio (1)	**1.21:1**	0.97:1
(1) Total liquid assets over total current liabilities, excluding amounts due to related parties and deferred revenue		

Guaranteed investment certificates have been included in liquid assets due to their ability to be cashed in if necessary; although an interest penalty would be incurred if this is done.

The quick ratio as defined above is a non-IFRS financial measure. We believe this is 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, 2022, Novra's quick ratio was 1.21:1 or $1.21 of liquid assets available to cover each $1.00 of third-party current liabilities, an increase from 0.97:1 at December 31, 2021. This improvement was primarily the result of entering into a new non-current promissory note to a related party to, among other things, replace a previous current promissory note to that same party. This had the effect of reducing current liabilities. Note that a significant portion (December 31, 2022 - $1.1 million, December 31, 2021 - $2.1 million) of the current liabilities included in the calculation of the quick ratio are customer deposits. This is a liability that reverses once customers have been invoiced for the related orders.

The following is a summary of cash flows by activities for the year 2022 vs. 2021. Overall, cash decreased by $1.0 million during the twelve months ended December 31, 2022. This decrease is fully the result of Novra's GICs being excluded from cash for reporting purposes, although they can be converted to cash. During 2022, GICs were purchased for $1.35 million. Combined cash plus GICs at December 31, 2022 totalled $3.3 million, which is $355 thousand more than cash at December 31, 2021, when Novra did not hold any GICs.

Operating activities

We had positive cash flows of $1.3 million from operating activities during the year 2022, compared to positive cash flows from operating activities of $252 thousand for the same period in 2021. This was mostly a result of the Net loss in 2022 adjusted for non-cash depreciation and amortization.

Investing activities

Cash flows from investing activities resulted in $1.9 million reduction in cash (2021 - $628 thousand reduction). The primary uses of this cash in 2022 were the purchase of a GIC and the costs of development assets.

Financing activities

We had negative $694 thousand net cash flow from financing activities during the year of 2022, compared to negative net cash from financing activities of $1.1 million in the comparable prior period. In the current period we made repayments on our WEDC loan and IMT promissory notes and made lease payments of $586 thousand toward our lease liabilities (2021 - $620 thousand).

As of the date of this MD&A we continue to have access to the RBC Credit Facilities. There are no amounts outstanding.

Working Capital Ratio

Novra's working capital ratio was as follows:

	31-Dec-22		December 31, 2021	
Working Capital:				
Current assets	**$**	**6,202**	$	6,509
Current liabilities		**5,697**		7,001
Working Capital:	**$**	**505**	$	(492)
Working capital, excluding related party and deferred revenue balances	**$**	**2,891**	$	2,276
Working capital ratio[(1)]		**1.87:1**		1.54:1
(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 increased to $505 thousand at December 31, 2022 from negative $492 thousand at December 31, 2021. This is an improvement of $997 thousand. Novra's working capital excluding related party and deferred revenue balances increased to $2.9 million at December 31, 2022 from $2.3 million at December 31, 2021. Our working capital ratio (as defined above) improved to 1.87:1 or $1.87 of current assets per $1.00 of current liabilities, excluding amounts due to related parties and deferred revenue at December 31, 2022.

Contractual obligations and commitments

At December 31, 2022, Novra's contractual obligations and commitments were as follows:

Payment due:	Total	Within 1 year	1 to 5 years	5 to 10 years	10+ years
Borrowings (Note 11)	$ **2,615**	$ 218	$ 110	$ 2,137	$ 150
Operating leases (Note 18)	**1,901**	240	1,435	226	
Purchase commitments (Note 18)	**-**	-	-	-	-
Trade payables and other payables	**1,711**	1,711	-	-	-
Total third party contractual obligations	**6,227**	2,169	1,545	2,363	150
Promissory notes from related party (Note 16)	**1,200**	-	1,200	-	-
Advances from related parties (Note 16)	**1,590**	1,590	-	-	-
Total contractual obligations	**$ 9,017**	**$ 3,759**	**$ 2,745**	**$ 2,363**	**$ 150**

Refer to the notes to the Consolidated Financial Statements for further details.

Based on the December 31, 2022 liquid assets (as defined above) and working capital, we have sufficient liquid resources to fund all third-party contractual obligations coming due within one year.

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.

At December 31, 2022 the Company had cash and cash equivalents of $2.0 million, cashable GICs of $1.35 million and access to an undrawn revolving facility of $845 thousand (the RBC Credit Facilities as described in Note 11 of the audited 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, 2022, Novra's total outstanding voting common shares were 33,420,293 excluding the 2,000,000 common shares held by our subsidiary, Wegener (December 31, 2021 - 33,420,293). Our debt and equity positions were as follows:

	December 31, 2022		December 31, 2021	
Borrowings (drawn)	$	2,615	$	2,510
Promissory notes from related party		1,200		864
Shareholders' equity		(2,814)		(1,727)
Total capital resources	$	1,001	$	1,647

The change in capital resources was primarily due to Net Income (loss) for the period.

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, 2022, 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 16 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 audited 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 audited Consolidated Financial Statements for the years ended December 31, 2022 and 2021 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.

FINANCIAL INSTRUMENTS AND OTHER INSTRUMENTS

There were no significant changes to the types of financial instruments held during the year ended December 31, 2022. For further details refer to Note 8 of the audited Consolidated Financial Statements for the years ended December 31, 2022 and 2021, with additional information on Borrowings in Note 11.

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.

- 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 2023.
- 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.
- Escalating lead-time and availability issues across the globe for electronic and other components that that are used in Novra's products could significantly delay our ability to build products and/or increase costs.
- We rely on a limited number of contract manufacturers, including off-shore 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. Loss of the expertise, experience and corporate knowledge of current key personnel could negatively affect Novra's operations.
- 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.
- On-going or new public health crises may affect economies and cause economic downturns. They may also cause staff shortages, reduced customer demand, a rise in customer delinquency, delayed or inadequate performance by supply chains, and increased government regulations or interventions, all of which may negatively affect the business, financial condition or results of operations of the company.
- With international customers and suppliers, global economic and geopolitical uncertainty may negatively affect our ability to make sales and to build our products.
- Because our products and solutions are often purchased as part of large corporate infrastructure projects, the reduced availability and higher cost of credit to our customers could reduce their ability to purchase our products and services.
- Depending on Wegener's financial performance, we may further delay or abandon the acquisition of the remaining 48.4% of Wegener. Also, there can be no guarantee that Wegener shareholders will approve eventual acquisition of the remaining 48.4%.