

QUANTUM eMOTION CORP.

Management's Discussion and Analysis

June 30, 2022

QUANTUM eMOTION CORP. (formerly Quantum Numbers Corp.)

The following analysis should be read in conjunction with the annual financial statements, including accompanying notes, of Quantum eMotion Corp. (“the Company”) for the year ended December 31, 2021. The unaudited condensed interim financial statements for the quarter ended June 30, 2022, including comparative figures, have been prepared in accordance with IFRS applicable to the preparation of interim financial statements, including IAS 34, *Interim Financial Reporting*. All amounts are in Canadian dollars unless otherwise indicated.

Further information regarding the Company and its operations are filed electronically on the System for Electronic Document Analysis and Retrieval (“SEDAR”) in Canada and can be obtained from www.sedar.com.

1.1 FORWARD LOOKING STATEMENTS

The sections of this management discussion and analysis (“MD&A”) on the Company’s strategy and action plan, its intellectual properties, development and financial reporting reflecting management’s current expectations contain “forward-looking statements.” Such statements should be understood in context, particularly statements that reflect the Company’s opinions, estimates and expectations about future events or results. Such forward-looking statements are subject to certain factors and involve some risks and uncertainties. There can be no assurance that such statements will prove to be accurate. Factors that could cause future results, activities and events to differ materially from those expressed or implied by such forward-looking statements include, but not limited to, possibility or not to obtain the patent, time required to obtain such patent, risks inherent in the hi-tech industry, and the time it will take for the industry to be ready to move to quantic solutions. These risks and uncertainties are described in this MD&A and also the annual information form filed on SEDAR.

1.2 INCORPORATION, NATURE OF OPERATIONS AND GOING CONCERN

Quantum eMotion Corp. was incorporated under the *Business Corporations Act* of Ontario on July 19, 2007.

The head office, principal address and records office of the Company are located at 2300 Alfred Nobel, bureau 209, Montreal, Qc, H4S 2A4. The Company is a developer of a new generation of cryptographic solutions pursuant to the acquisition of intellectual property (See 1.8).

The business of technology involves a high degree of risk and there can be no assurance that projects under research and development will proceed through to achieve commercialization. Risks related to the value of the Company’s intangible assets, completing proof of concept studies, protecting intellectual property rights, the ability of the Company to raise additional financing, and risks inherent to new technologies, such as risk of obsolescence, slow adoption and competing technological advances. Changes in future conditions could require material impairment of assets.

These financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) on a going concern basis, which contemplates that the Company will be able to realize its assets and discharge its liabilities in the normal course of business. For the six months ended June 30 2022, the Company incurred a net loss of \$1,232,849 (2021 - \$849,857) and had negative cash flows from operations of \$911,099 (2021 - \$949,227). In addition, the Company had accumulated deficit of \$9,201,189 as at June 30, 2022.

Management expects that the working capital (current assets in excess of current liabilities) available to the Company at June 30, 2022, provides the Company with adequate funding to meet its short-term obligations for the next 12 months and to meet the timelines of its development programs and pay its overhead and administrative costs. However, the Company does not expect to generate revenue from product sales unless and until it successfully completes development of its cryptographic solutions, which may take a number of years and is subject to significant uncertainty.

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1.2 INCORPORATION, NATURE OF OPERATIONS AND GOING CONCERN (Continued)

The Company expects to incur significant development and commercialization expenses related to product development sales, marketing and distribution. As a result, the Company will need additional financing in the future to support its continuing operations. Until such time that it can generate significant revenue from product sales, if ever, the Company expects to finance its operations through a combination of public or private equity or debt financings or other sources.

The Company currently has no committed sources of financing available. While the Company has been successful in securing financing in the past, raising additional funds is dependent on a number of factors outside the Company's control, and as such there is no assurance that it will be able to do so in the future. The ability of the Company to meet its commitments and discharge its liabilities as they become due and become profitable is dependent on the completion of the development of its technology and its commercial production, and on its ability to raise additional funding to finance these activities. The conditions mentioned above indicate the existence of a material uncertainty that may cast a significant doubt as to the Company's ability to continue as a going concern.

The financial statements do not reflect the adjustments to the carrying values of assets and liabilities that would be necessary if the Company were unable to realize its assets or discharge its obligations in anything other than the ordinary course of operations.

In February 2022, Russia invaded Ukraine. The impact of this conflict remains difficult to assess but is adding to the challenges associated with the pandemic, including inflation and supply chain issues, and has created additional awareness on the cybersecurity's threats and vulnerabilities.

1.3 SENIOR MANAGEMENT CHANGES

None.

1.4 COMPANY OVERVIEW AND STRATEGY

INTELLECTUAL ACTIVITIES

The primary management objective has been to strengthen the Company in the following three sectors of activities:

Technology

Our primary objective is to make our cryptographic solutions technology accessible as rapidly as possible to potential clients and partners, secure its effectiveness and ensure that the Intellectual Property is well protected. In order to stay focused on this objective, we are closely working with our partners to maximize the potential and security of our technology. The Company is developing complementary metal-oxide semiconductor ("CMOS") implementations with l'École de Technologie Supérieure ("ETS") to ensure greater competitiveness. During the first quarter of 2021, the Company and ETS were awarded a \$250,000 grant from Prompt under its Quantum development program covering between 40% to 60% of eligible cost to develop three different CMOS implementations. The development work is ongoing in collaboration of Dr Ghyslain Gagnon and the ETS.

1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

INTELLECTUAL ACTIVITIES (Continued)

QUANTUM eMOTION CORP. (formerly Quantum Numbers Corp.)

Technology (Continued)

On June 17, 2021, the Company chose Syntronic to finalize the design and prepare the manufacturing of its first commercial hardware product with a view of having a workable and marketable device prior to year end. On March 22, 2022, the Company issued a press release confirming the launch of its game changer QRNG2, a new quantum random number generator (QRNG) that delivers pure entropy at 1.5 Gb/s, the highest throughput available today in a marketable QRNG. This major breakthrough was achieved within our budget parameters despite challenges imposed by major supply chain issues. In a first phase, 10 devices have been produced and are currently at different testing stages.

During the past quarter the company has accelerated its R&D expenses as indicated in the presentation from the CEO. Secured messenger, blockchain application and other verticals are the focus of the company for the application and usage in products of its patented technology.

Patents

As of today, the Company owns two patent families which have been filed in several countries, and which have led to the issuance of several patents.

The first patent family stems from work performed at Sherbrooke University, by the team of Professor Bertrand Reulet, and was acquired by the Company.

As the Company required its patent to pass the introduction level with potential clients, it was then decided to work with the Company's patent agent to assess the patentability of our technology. The Company received the final report that indicates that it should continue the National/Regional Phase as planned. By doing the legwork at the stage of the patentability report, the Company was able to respond rapidly to objections which were raised at the national/regional level, such as objections raised by the European Patent Office ("EPO") examiner. The general scope of the first patent family is related to the use of a monitored flow of electrons across a quantum tunnelling barrier as a quantum random signal source which is then used to produce random numbers.

The second patent family stems from work performed internally by the family and generally concerns technology which was developed to eliminate non-quantum noise from the quantum signal and therefore allow ensuring that the random numbers are purely random and entirely based on quantum processes.

In October 2021, the Company filed for a patent application covering a minimalistic circuit which utilizes the computer's hardware to both power an on-chip quantum entropy source and turn the resulting entropy signal into random numbers of quantum origin on the go. The product will eventually be a plug-and-play ultraportable QRNG module that provides easy-to-use hardware protection for consumer electronics.

On June 19, 2022 Brazil became the latest major country to indicate its willingness to grant the METHOD FOR GENERATING RANDOM NUMBERS AND ASSOCIATED RANDOM NUMBER GENERATOR patent. Ongoing efforts are being made to ensure that all relevant jurisdiction are covered as the patents and our patent strategy is core to the success of the company.

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1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

INTELLECTUAL ACTIVITIES (Continued)

Status of patents

First Patent Family Method for generating random numbers and associated random number generator

<u>Country</u>	<u>Status</u>
United States	Two patents were granted in the United States, including a first one granted on August 7, 2018 and a second granted on October 8, 2019.
Russia	Patent granted
European Patent Office	EPO granted the patent on February 19, 2020. The EPO process includes an opposition procedure by which third parties may oppose the grant. The opposition procedure expired November 19, 2020 and the European Patent has been validated in a number of countries: Germany, Spain, Finland, France, Great-Britain, Italy and the Netherlands.
Thailand, Canada, Brazil, India, Republic of Korea	Patent pending
Australia	Patent granted in June 2020
China	Patent granted

Second Patent Family Method and system for generating a random bit sample

<u>Country</u>	<u>Status</u>
European Patent Office	EPO granted the patent on October 23, 2019, and the opposition period ended on July 23, 2020. The European Patent has been validated in Germany, Spain, Finland, France, Italy, Sweden and the Netherlands.
United States	Two patents were granted.
Australia, Brazil, Indonesia, India, Japan, South Korea, Russia	Patent pending

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1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

INTELLECTUAL ACTIVITIES (Continued)

Market

Since 2016, the Company focused its resources in developing its key IP position to align a successful venture in the emerging Quantum Random Number Generator (“QNRG”) market. The National Institute of Standards and Technology Post Quantum Cryptography Standards Committee is still working on related protocols, and we believe to have the right attributes to fulfill the future requirements for target markets.

In April 2021, the Company received a third-party valuation that concluded that the assessment of management on its target market was credible. As the Covid-19 situation remains present, the Company keeps a very tight monitoring on all news pertaining to the Quantum environment, and has, amongst other initiatives, joined the Quantum Alliance established by Hudson Institute to ensure a clear presence in the quantum ecosystem. Moreover, the CEO of the Company is now a valued panelist on the subject, bringing actionable intelligence in the Company with the newly established networks, both local and international.

The Company specifically intends to target the highly valued medical devices and Healthcare Services industries while ensuring its technology is also relevant and applicable to others, such as Datacenters, Blockchain technologies, Financial Services, Cloud-Based IT Security Infrastructure, Classified Government Networks and Communication Systems, Secure Device Keying (IOT, Automotive, Consumer Electronics) and Quantum computing and the gaming industry.

In June 2022 the Company joined the Canadian Association of Defense and Security Industries and attended the CANSEC trade show. The attendance confirmed the relevance of the company’s technology and the company will actively follow up for potential collaboration with key players of the industry.

In July 2022 the company’s CEO made a joint presentation with École de Technologie Supérieure to Mr. Pierre Fitzgibbon, the Quebec Minister of Economy and Innovation. Representing the ETS was François Gagnon, General Manager and Christian Casanova, director of research and partnership. The purpose of the presentation was to illustrate the collaboration between a major Technological Engineering University and a Quebec-based startup, in the development of a product in the Quantum space. Quantum technology development is strongly supported by the Quebec Government who has announced some major investments in that space in 2022. The Company announced that one of its first products could be commercialized within a relatively short timeframe and it was therefore, relevant that this be brought to the attention of the Minister, as the Company is one of the first and only Quebec based company known to management to be in such a position. On August 15th the Company announced its first blockchain application of QRNG technology developed in collaboration with ETS. The company is working in expanding its collaboration with the Quebec Government.

1.5 HIGHLIGHTS

For the six months ended June 30, 2022, the Company incurred a net loss and comprehensive loss of \$1,232,849 compared to a net loss and comprehensive loss of \$849,857 in 2021.

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As at June 30, 2022, the Company had a net working capital (current assets in excess of current liabilities) of \$4,159,632 compared to a net working capital of \$1,809,871 as at December 31, 2021.

In August 2022 a former director exercised part of his outstanding options for an amount of 10,000\$

1.6 SELECTED PERIODIC INFORMATION

	Six months ended June 30		
	2022	2021	2020
	\$	\$	\$
Net loss and comprehensive loss	(1,232,849)	(849,857)	(411,733)
Basic and diluted loss per share	(0.009)	(0.009)	(0.004)

	Balance as at	
	June 30, 2022	December 2021
	\$	\$
Cash	2,832,781	1,021,552
Total assets	5,332,780	3,100,850
Total liabilities	277,046	389,431
Equity	5,055,734	2,711,419

1.7 OPERATING ACTIVITIES

The net loss and comprehensive loss for the six months ended June 30, 2022 increased to \$1,232,849 from a net loss and comprehensive loss of \$541,048 in 2021 mainly due to an increase in share-based payments for an amount of \$60,593, management fees for an amount of \$133,249, information technology for an amount of \$119,374, research and development for an amount of \$52,960, offset by a decrease of consulting fees for an amount of \$84,596.

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1.8 INTELLECTUAL PROPERTY

The carrying amount of the intellectual property consists of:

	Balance as at December 31, 2021	Additions	Balance as at June 30, 2022
	\$	\$	
Cost			
SOCPRA license	446,112	-	446,112
Development costs	560,853	7,725	568,578
	<u>1,006,965</u>	<u>7,725</u>	<u>1,014,690</u>
Amortization			
SOCPRA license	49,804	11,061	60,865
	<u>49,804</u>	<u>11,061</u>	<u>60,865</u>
Carrying amount			
SOCPRA license	396,308		385,247
Development costs	560,853		568,578
	<u>957,161</u>		<u>953,825</u>

	Balance as at December 31, 2020	Additions	Balance as at June 30, 2021
	\$	\$	\$
Cost			
SOCPRA license	446,112	-	446,112
Development costs	220,967	-	220,967
	<u>667,079</u>	<u>-</u>	<u>667,079</u>
Amortization			
SOCPRA license	27,499	5,500	32,999
	<u>27,499</u>	<u>5,500</u>	<u>32,999</u>
Carrying amount			
SOCPRA license	418,613		413,113
Development costs	220,967		220,967
	<u>639,580</u>		<u>634,080</u>

On August 3, 2016, the Company entered into an intellectual assignment agreement (“IP agreement”) with Societe de Commercialisations des Produits de la recherche appliquee SOCPRA Sciences et Genie SEC (“SOCPRA”) and its investors. Until the expiry of the last patent rights, which is expected in May 2035, the Company will pay to SOCPRA a royalty of 5% calculated on the net sales price of products sold by the Company. The Company may have an option to buy back the royalties in the future at terms and conditions to be agreed upon by both parties.

The carrying amount of the intellectual property is \$953,386. An annual impairment test was performed in the year due to the fact the development costs are not yet available for use. The recoverable amount of the asset was estimated based on its fair value less costs of disposal.

The recoverable amount was estimated to be higher than the carrying amount of the asset and no impairment was required.

No amortization was taken on the development costs as these assets are not yet available for use.

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1.9 SELECTED FINANCIAL INFORMATION AND OPERATING RESULTS

	Six months ended June 30	
	2022	2021
	\$	\$
Expenses		
Share-based payments	375,824	315,231
Management fees	266,938	133,689
Information technology	119,374	-
Professional fees	77,141	124,810
Investor relations	57,266	51,274
Office	56,254	23,417
Research and development	52,960	-
Salaries	42,135	5,787
Travel	27,677	-
Filing and listing fees	23,293	48,974
Consulting fees	21,880	106,476
Financial expenses	11,793	3,498
Amortization	11,061	11,061
Insurance	9,618	7,229
Other	3,689	-
Promotion expenses	-	19,187
Net loss and comprehensive loss for the year	1,156,903	850,633
Basic and diluted loss per share	0.009	0.009
Weighted average number of common shares outstanding	133,457,368	97,833,390

1.10 SUMMARY OF QUARTERLY RESULTS

The following table sets forth selected quarterly financial information for each of twelve most recently completed quarters.

Three-month period ended	Net loss and comprehensive loss for the period	Basic and diluted loss per share
	\$	\$
June 30, 2022	(541,048)	(0.004)
March 31, 2022	(691,801)	(0.005)
December 31, 2021	(270,993)	(0.002)
September 30, 2021	(441,798)	(0.004)
June 30, 2021	(411,733)	(0.004)
March 31, 2021	(438,124)	(0.005)
December 31, 2020	(389,272)	(0.006)
September 30, 2020	(132,789)	(0.002)
June 30, 2020	(119,342)	(0.002)
March 31, 2020	(157,848)	(0.003)
December 31, 2019	(161,265)	(0.003)
September 30, 2019	(140,307)	(0.002)

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1.11 LIQUIDITY

As at June 30, 2022, the Company had a net working capital (current assets in excess of current liabilities) of \$4,159,632 compared to a net working capital of \$1,809,871 in December 31, 2021.

1.12 CASH FLOWS

The Company's operating activities used \$911,099 for the six months ended June 30, 2022, compared to \$949,227 in 2021. The decrease in cash flow used is related to payments executed for prior period expenses.

The Company's investing activities used \$479,012 for the six months ended June 30, 2022, compared to \$- generated in 2021. The decrease in cash flows used resulted mainly from the additions to intellectual property and the acquisition of investments offset by the proceeds from sale of investments.

The Company's financing activities generated \$3,201,340 for the six months ended June 30, 2022, compared to \$2,317,050 in 2021. The increase in cash flows is mainly due to an increase in proceeds from exercise of warrants.

1.13 STOCK OPTIONS

The Company's share options are as follows for the reporting periods presented:

	June 30, 2022		December 31, 2021	
	Number of options	Weighted average exercise price	Number of options	Weighted average exercise price
		\$		\$
Balance outstanding, beginning of year	10,930,000	0.13	6,650,000	0.07
Granted	500,000	0.23	5,880,000	0.18
Exercised	(150,000)	0.10	(1,600,000)	0.06
Expired	(450,000)	0.20	-	-
Balance outstanding, end of year	<u>10,830,000</u>	<u>0.12</u>	<u>10,930,000</u>	<u>0.13</u>
Balance exercisable, end of year	<u>8,452,625</u>	<u>0.11</u>	<u>7,046,875</u>	<u>0.11</u>

The weighted average remaining contractual life for options outstanding at June 30, 2022 is 2.12 (December 31, 2021 – 2.64) years.

Share-based compensation recognized under this plan amounted to \$43,422 and \$375,824, respectively, for the three-month and six-month periods ended June 30, 2022 (2021 - \$315,231 and \$141,231).

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1.13 STOCK OPTIONS (Continued)

The Company's share options are as follows for the reporting periods presented:

Outstanding and exercisable options are as follows:

Expiry date	Exercise price	June 30, 2022	
		Outstanding	Exercisable
	\$		
2022-12-09	0.12	900,000	900,000
2023-06-06	0.205	350,000	350,000
2023-11-22	0.1	200,000	200,000
2023-12-17	0.05	2,500,000	2,500,000
2023-12-22	0.065	750,000	750,000
2024-02-02	0.14	2,500,000	2,500,000
2024-09-12	0.12	250,000	250,000
2025-03-31	0.1	150,000	150,000
2025-03-31	0.18	650,000	203,125
2025-10-25	0.24	80,000	10,000
2026-04-21	0.24	500,000	500,000
2028-01-26	0.14	500,000	14,500
2028-03-12	0.215	500,000	125,000
2028-08-23	0.265	500,000	-
2029-02-14	0.225	500,000	-
		<u>10,830,000</u>	<u>8,452,625</u>

1.14 SHARE PURCHASE WARRANTS

The Company's warrants are as follows for the reporting periods:

	June 30, 2022		December 31, 2021	
	Number of warrants	Weighted average exercise price	Number of warrants	Weighted average exercise price
		\$		\$
Balance outstanding, beginning of year	28,115,000	0.15	-	-
Granted	-	-	40,000,000	0.15
Exercised	(21,040,000)	0.15	(11,885,000)	0.15
Expired	(7,075,000)	0.15	-	-
Balance outstanding, end of year	-	-	28,115,000	0.15

1.15 OFF-BALANCE SHEET ARRANGEMENTS

The Company does not have any off-balance sheet arrangements.

1.16 FINANCIAL INSTRUMENTS

All financial instruments are recognized when the Company becomes a party to the contractual provisions of the financial instrument and are initially measured at fair value plus transaction costs, except for financial assets and financial liabilities carried at fair value through profit or loss, which are measured initially at fair value. Financial assets are derecognized when the contractual right to the cash flows from the financial assets expire, or when the financial asset and all substantial risks and rewards are transferred. Refer to Note 11 of the annual financial statements for the year ended December 31, 2021 for additional information on the Company's financial instruments.

1.17 FINANCIAL RISK MANAGEMENT

In the normal course of operations, the Company is exposed to various financial risks. Refer to Note 11 of the annual financial statements for the year ended December 31, 2021 for additional information on the Company's main financial risks.

1.18 MANAGEMENT OF CAPITAL

The capital structure of the Company consists of equity attributable to common shareholders, comprising issued share capital, reserves and deficit. The Company's objectives when managing capital are to: (i) preserve capital; (ii) obtain the best available net return; and (iii) maintain liquidity.

The Company manages the capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. To maintain or adjust the capital structure, the Company may attempt to issue new shares. There were no changes to the Company's approach to capital management during the six months ended June 30, 2022, nor during the year ended December 31, 2021.

The Company is not subject to externally imposed capital requirements.

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1.19 RELATED PARTY TRANSACTIONS

The Company's related parties include insiders, companies under common control and joint key management, as described below.

Unless otherwise stated, none of the transactions incorporate special terms and conditions and no guarantees were given or received. Outstanding balances are usually settled in cash.

Transactions with key management

The key management of the Company are the members of senior management and the Board. The remuneration for the year of key management (including the amount above) is as follows:

	<u>2022</u>	<u>2021</u>
	\$	\$
Management fees	266,938	116,435
Share-based payments	<u>297,198</u>	<u>204,000</u>
	<u>564,136</u>	<u>320,435</u>

As at June 30, 2022, an amount of \$46,128 is due to key management and is included in accounts payable and accrued liabilities (December 31, 2021 - \$72,564).

1.20 CRITICAL ACCOUNTING ESTIMATES

The critical accounting estimates are described in Note 2 of the annual financial statements for the year ended December 31, 2021.

1.21 CHANGES IN SIGNIFICANT ACCOUNTING POLICIES

The accounting policies used are those described in the Company's annual financial statements in Note 3 for the year ended December 31, 2021 and have been applied throughout the period unless otherwise stated.

1.22 OTHER

Disclosure of Outstanding Securities as at August 29, 2022.

Outstanding common shares: **135,402,838**
Outstanding options: **11,820,000**
Outstanding share purchase warrants: **nil**

(s) Francis Bellido, Chief Executive Officer

(s) Marc Rousseau, Chief Financial Officer

Montreal (Quebec), August 29, 2022