

QUANTUM eMOTION CORP.

Management's Discussion and Analysis

June 30, 2023

QUANTUM eMOTION CORP.

The following management's discussion and analysis ("MD&A") of the financial condition and results of the operations of Quantum eMotion Corp. (the "Company", "QeM" or "Quantum") constitutes management's review of the factors that affected the Company's financial and operating performance for the six months ended June 30, 2023 compared to the same period of the prior year.

The following analysis should be read in conjunction with the annual financial statements, including accompanying notes, of the Company for the year ended December 31, 2022. The unaudited financial statements for the six months ended June 30, 2023, including comparative figures, have been prepared in accordance with IFRS.

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.sedarplus.ca.

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, 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 condensed 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, 2023, the Company incurred a net loss of \$1,037,448 (2022 - \$1,232,849) and had negative cash flows from operations of \$896,094 (2022 - \$911,099). In addition, the Company had accumulated deficit of \$11,810,358 as at June 30, 2023.

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

Management expects that the working capital of \$1,970,234 (current assets in excess of current liabilities) available to the Company at June 30, 2023, will provide 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 expects to generate revenue from product sales by Q1 2024.

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.

1.3 SENIOR MANAGEMENT CHANGES

N/A

1.4 COMPANY OVERVIEW AND STRATEGY

RESEARCH & DEVELOPMENT 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.

On June 1, 2023, the company announced the introduction of Entropy as a Service (EaaS) through their QxEaaS system, enhancing data security. EaaS offers on-demand randomness, vital for cryptography. Using QRNG2, which employs quantum electron tunneling, truly unpredictable random numbers are generated. This system reinforces QeM's Sentry-Q cryptography platform against cyberattacks. EaaS distributes secure keys and strings with patented quantum-based entropy sources. Rigorous tests, like NIST Statistical Test Suite, validate the quality of generated entropy. The integration of EaaS and QeM's cryptography library, with NIST-approved quantum-safe primitives, ensures cutting-edge security for data communication and authentication.

1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

RESEARCH & DEVELOPMENT ACTIVITIES (Continued)

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.

On April 12, 2023, Quantum announced the recent patent application for a new method to operate a Blockchain Wallet that benefits from the protection provided by the QeM Quantum Random Number Generator (QRNG2). The market for hardware wallets has grown significantly in recent years due to the increasing demand for secure cryptocurrency storage solutions. According to a recent report by Markets and Markets, the global hardware wallet market is expected to grow from \$1.0 billion in 2020 to \$1.9 billion by 2025, at a compound annual growth rate (CAGR) of 13.5% during the forecast period. The growth of the hardware wallet market can be attributed to several factors, including the continuous adoption of cryptocurrencies after their recent volatility. QeM Quantum crypto-Wallet will eventually be considered one of the safest ways to store and manage cryptocurrencies, and they will become indispensable for anyone who wants to keep their digital assets highly secure.

1.4 **COMPANY OVERVIEW AND STRATEGY (Continued)**

RESEARCH & DEVELOPMENT 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 European Patent has been validated in a number of countries: Germany, Spain, Finland, France, Great-Britain, Italy and the Netherlands.
Thailand, India	Patent pending
Australia	Patent granted
China	Patent granted
Brazil	Patent granted
Canada	Patent granted
Republic of Korea	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. The European Patent has been validated in Germany, Spain, United Kingdom, Finland, France, Italy, Sweden and the Netherlands.
United States	Two patents were granted.
Brazil, Canada, China, India, Japan, South Korea, Thailand	Patent pending
Australia, Russia Indonesia	Granted

1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

RESEARCH & DEVELOPMENT ACTIVITIES (Continued)

Third Patent Family System and Method for Generating a Random Number, and circuit for communicating an analog random signal

Country

Status

Patent Cooperation Treaty Rights reserved in all PCT member states until May 2024

BUSINESS DEVELOPMENT ACTIVITIES

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. 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 15, 2022 the Company announced the completion of the design of its first blockchain application of QRNG technology developed in collaboration with ETS. The company is working in expanding its collaboration with the Quebec Government.

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1.5 HIGHLIGHTS

For the six months ended June 30, 2023, the Company incurred a net loss and comprehensive loss of \$1,037,448 compared to a net loss and comprehensive loss of \$1,232,849 in 2022.

As at June 30, 2023, the Company had a net working capital (current assets in excess of current liabilities) of \$1,970,234 compared to a net working capital of \$3,286,177 as at December 31, 2022.

1.6 SELECTED PERIODIC INFORMATION

	Six months ended June 30		
	2023	2022	2021
	\$	\$	\$
Net loss and comprehensive loss	(1,037,448)	(1,232,849)	(849,857)
Basic and diluted loss per share	(0.008)	(0.009)	(0.009)

	Balance as at	
	June 30, 2023	December 31, 2022
	\$	\$
Cash	1,696,579	2,594,051
Total assets	3,105,357	4,037,934
Total liabilities	422,181	377,754
Equity	2,683,176	3,660,180

1.7 OPERATING ACTIVITIES

The net loss and comprehensive loss for the six months ended June 30, 2023 decreased to \$1,037,448 from a net loss and comprehensive loss of \$1,232,849 in 2022. The variance is explained mainly by a decrease in share-based payments of \$315,380, in information technology of \$100,866, and in management fees of \$26,899, offset by an increase in research and development of \$194,797, in the fair value of investments in \$105,313, in professional fees of \$104,508, and in promotion expenses of \$51,956.

1.8 INTELLECTUAL PROPERTY

The carrying amount of the intellectual property consists of:

	Licenses \$	Rights on royalties \$	Total \$
Cost			
December 31, 2022	446,112	-	446,112
Additions	-	350,000	350,000
June 30, 2023	446,112	350,000	796,112
Accumulated amortization			
December 31, 2022	72,109	-	72,109
Amortization	11,061	-	11,061
June 30, 2023	83,170	-	83,170
Net book value			
June 30, 2023	362,942	350,000	712,942

On August 3, 2016, the Company entered into an intellectual assignment agreement (“IP agreement”) with Société de Commercialisation des Produits de la recherche appliquée SOCPRA Sciences et Génie 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.

As part of the agreement, Greybox has awarded a contract to the Company for the integration of the Sentry-Q technology into its digital therapeutics platform TakeCare. The development costs capitalized as at December 31, 2021 related to the development of prototypes. During the year ended December 31, 2022, the Company derecognized these development costs as a result of the decision to focus on the development of a cloud-based version of the prototypes in order to maximize the economic benefits of the technology. As a result, the Company no longer has the intention to directly commercialize the first iteration of these prototypes. The decision was taken in light of discussions with stakeholders and management assessment of most efficient and market receptive path to commercialization.

1.9 **SELECTED FINANCIAL INFORMATION AND OPERATING RESULTS**

	Six months ended June 30	
	2023	2022
	\$	\$
Expenses		
Research and development	247,757	52,960
Management fees	240,039	266,938
Professional fees	181,649	77,141
Salaries	76,768	42,135
Share-based payments	60,444	375,824
Promotion expenses	51,956	-
Office	44,838	56,254
Investor Relations	38,506	57,266
Travel	37,958	27,677
Filing and listing fees	30,390	23,293
Product development	26,415	-
Information technology	18,508	119,374
Insurance	11,472	9,618
Amortization	11,061	11,061
Consulting fees	-	21,880
Other	-	3,689
	1,077,761	1,145,110
Net loss and comprehensive loss for the year	1,037,448	1,232,849
Basic and diluted loss per share	0.008	0.009
Weighted average number of common shares outstanding	135,502,838	133,457,368

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1.10 SUMMARY OF QUARTERLY RESULTS

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

<u>Three-month period ended</u>	<u>Net loss and comprehensive loss for the period</u>	<u>Basic and diluted loss per share</u>
	\$	\$
June 30, 2023	(532,956)	(0.004)
March 31, 2023	(504,492)	(0.004)
December 31, 2022	(1,053,975)	(0.008)
September 30, 2022	(517,750)	(0.004)
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)

1.11 LIQUIDITY

As at June 30, 2023, the Company had a net working capital (current assets in excess of current liabilities) of \$1,970,234 compared to a net working capital of \$3,286,177 in December 31, 2022.

1.12 CASH FLOWS

The Company's operating activities used \$896,094 for the six months ended June 30, 2023, compared to \$911,099 in 2022. The decrease in cash flow used is related to payments executed for prior period expenses.

The Company's investing activities used \$1,378 for the six months ended June 30, 2023, compared to \$479,012 used in 2022. The decrease in cash flows used resulted mainly from the addition to intangible assets resulting from the broad commercial and technical agreement with Greybox Solutions.

The Company's financing activities generated \$- for the six months ended June 30, 2023, compared to \$3,201,340 in 2022. There were no cash flows generated given that there were no exercise of shares or warrants.

1.13 STOCK OPTIONS

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

	June 30, 2023		December 31, 2022	
	Number of options	Weighted average exercise price	Number of options	Weighted average exercise price
		\$		\$
Balance outstanding, beginning of year	10,930,000	0.12	10,930,000	0.13
Granted	350,000	0.08	1,100,000	0.15
Exercised	-	-	(250,000)	0.10
Expired	(650,000)	0.22	(800,000)	0.20
Balance outstanding, end of year	10,630,000	0.13	10,930,000	0.12
Balance exercisable, end of year	7,765,625	0.11	8,329,375	0.11

The weighted average remaining contractual life for options outstanding at June 30, 2023 is 1.84 (December 31, 2022 – 2.18 years).

Share-based compensation recognized under this plan amounted to \$27,175 and \$60,444 respectively, for the three-month and six-month periods ended June 30, 2023 (2022 - \$43,422 and \$375,824).

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, 2023	
		Outstanding	Exercisable
	\$		
November 22, 2023	0.10	100,000	100,000
December 17, 2023	0.05	2,500,000	2,500,000
December 22, 2023	0.065	750,000	750,000
February 2, 2024	0.14	2,500,000	2,500,000
September 12, 2024	0.12	250,000	250,000
March 31, 2025	0.10	150,000	150,000
March 31, 2025	0.12	50,000	50,000
March 31, 2025	0.18	650,000	365,625
September 30, 2025	0.15	150,000	150,000
October 25, 2025	0.24	80,000	25,000
March 31, 2026	0.08	600,000	50,000
April 21, 2026	0.24	500,000	500,000
June 30, 2026	0.10	300,000	-
January 26, 2028	0.14	500,000	125,000
March 12, 2028	0.215	500,000	125,000
March 16, 2028	0.10	50,000	-
August 23, 2028	0.265	500,000	125,000
February 14, 2029	0.225	500,000	-
		10,630,000	7,765,625

1.14 OFF-BALANCE SHEET ARRANGEMENTS

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

1.15 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, 2022 for additional information on the Company's financial instruments.

1.16 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, 2022 for additional information on the Company's main financial risks.

1.17 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, 2023, nor during the year ended December 31, 2022.

The Company is not subject to externally imposed capital requirements.

1.18 RELATED PARTY TRANSACTIONS

The Company's related parties include companies owned by key management.

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 remuneration for the six-month period of key management (including the amount above) is as follows:

	Six months ended June 30	
	2023	2022
	\$	\$
Management fees	240,039	266,938
Share-based payments	41,189	297,198
Other fees	7,588	-
	<u>288,816</u>	<u>564,136</u>

As at June 30, 2023, an amount of \$787 is due to key management and is included in accounts payable and accrued liabilities (December 31, 2022 - \$787).

1.19 CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

The critical accounting estimates and judgements are described in Note 2 of the annual financial statements for the year ended December 31, 2022.

1.20 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, 2022 and have been applied throughout the period unless otherwise stated.

1.21 OTHER

Disclosure of Outstanding Securities as at August 29, 2023.

Outstanding common shares: **135,502,838**

Outstanding options: **10,630,000**

Outstanding share purchase warrants: **nil**

(s) Francis Bellido, Chief Executive Officer

(s) Marc Rousseau, Chief Financial Officer

Montreal (Quebec), August 29, 2023