**TITAN MEDICAL INC.**

**MANAGEMENT'S DISCUSSION AND ANALYSIS**

**FOR THE THREE MONTHS ENDED MARCH 31, 2019**

**(IN UNITED STATES DOLLARS)**

This Management's Discussion and Analysis ("MD&A") is dated May 14, 2019.

This MD&A provides a review of the performance of Titan Medical Inc. ("Titan" or the "Company") and should be read in conjunction with its unaudited condensed interim financial statements for the three months ended March 31, 2019 (and the notes thereto) (the "Interim Financial Statements") and the annual audited financial statements for the years ended December 31, 2018 and 2017. The Interim Financial Statements have been prepared in accordance with International Financial Reporting Standards 34, Interim Financial Reporting ("IAS 34"). All financial figures are in United States Dollars except where otherwise noted.

***Internal Control over Financial Reporting***

During the three months ended March 31, 2019, no changes were made to the Company's internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

***Forward-Looking Statements***

This discussion includes certain statements that may be deemed "forward-looking statements". All statements in this discussion other than statements of historical facts that address future events, developments or transactions that the Company expects, are forward-looking statements. These forward-looking statements are made as of the date of this MD&A. Forward-looking statements are frequently, but not always, identified by words such as "expects", "expected", "expectation", "anticipates", "believes", "intends", "estimates", "predicts", "potential", "targeted", "plans", "possible", "milestones", "objectives" and similar expressions, or statements that events, conditions or results "will", "may", "could", or "should" occur or be achieved. Forward-looking statements that appear in this MD&A include:

- the Company is committed to developing its robotic surgical system with the objective of substantially improving upon minimally invasive surgery;
- the Company intends to initially pursue focused surgical indications for the SPORT Surgical System, which may include one or more of gynecologic, urologic, colorectal or general abdominal procedures;
- the SPORT Surgical System is being developed with the goal of inserting the interactive multi-articulating instruments and the 3D high definition vision system into the patient's body cavity through a single incision;
- the Company's technology and research and development objectives and milestones, including such development milestones as achieving design freeze, estimated costs, schedules for completion and probability of success;

- the Company's intention with respect to updating any forward-looking statement after the date on which such statement is made or to reflect the occurrence of unanticipated events;
- the Company's expectation with respect to continuing animal and human cadaver studies;
- the Company's expectation that it can in a timely manner produce the appropriate preclinical and clinical data required for a 510(k) application to the U.S. Food and Drug Administration, and Technical File for the CE Mark;
- the Company's expectation with respect to launching a commercial product in certain jurisdictions;
- the Company's intentions to develop a robust training curriculum and post-training assessment tools;
- the Company's plans to develop and commercialize the SPORT Surgical System and the estimated incremental costs (including the status, cost and timing of achieving the development milestones disclosed herein);
- the Company's plans to design, create and refine software for production system functionality of the SPORT Surgical System and the estimated incremental costs (including the status, cost and timing of achieving the development milestones disclosed herein);
- the Company's intentions to complete formative and summative human factors studies;
- the Company's belief that existing and planned prototype units will be suitable to support human factors studies, preclinical evaluation and activities related to securing confirmatory human data during 2019;
- the Company's intentions with respect to initiating marketing activities following receipt of the applicable regulatory approvals;
- the Company's intention to continue to assess specialized skill and knowledge requirements and recruitment of qualified personnel and partners;
- the Company's belief that the materials and parts necessary for the manufacture of a clinical-grade SPORT Surgical System will be available in the marketplace;
- the Company's expectation that it will be able to finance its continuing operations by accessing public markets for its securities;
- the Company's intended use of proceeds of any offering of securities;
- the Company's intention with respect to not paying any cash dividends on Common Shares in the foreseeable future;
- the Company's intention to retain future earnings, if any, to finance expansion and growth;
- the Company's projected competitive conditions with respect to its products;
- the Company's technology and research and development objectives, including such development milestones as completing the engineering confidence build and achieving design freeze, estimated costs, schedules for completion and probability of success;
- the Company continues to explore in-licensing opportunities for technologies that may be used in conjunction with the Company's robotic surgical system;

- the Company anticipates that it will continue its pursuit of key strategic relationships;
- the Company's continuing efforts to secure its intellectual property and expanding its patent portfolio by filing patent applications as it progresses in the development of robotic surgical technologies and by licensing suitable technologies;
- the Company's plan to focus on the development and commercialization of the SPORT Surgical System at estimated incremental costs and according to a given timeline; and
- the Company intends to utilize a direct sales force and/or distribution partner(s) to initiate marketing the SPORT Surgical System to hospitals.

Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are no guarantees of future performance and actual results or developments may differ materially from those in the forward-looking statements. Forward-looking statements are statements about the future and are inherently uncertain, and actual results of the Company or other future events or conditions may differ materially from those reflected in the forward-looking statements due to a variety of risks, uncertainties and other factors, such as current global financial conditions, dependence on key personnel, conflicts of interest, dependency on additional financing, the Company's history of losses, reliance on strategic alliances, the ability to retain key personnel in a highly-competitive employment environment, the possibility of the Company's inability to augment its management team when required, the possibility that the Company's trade secrets and confidential information may be compromised, reliance on third parties for important aspects of the Company's business, uncertainty as to product development and commercialization milestones, results of operations, competition, technological advancements, rapidly changing markets, uncertain market for the Company's products and technology, uncertainty as to the enforceability of the Company's intellectual property, infringement of intellectual property rights of others, scope and cost of insurance and uninsured risks, risks associated with the Company entering into additional long-term contractual arrangements, ability to license other intellectual property rights, government regulation, changes in market conditions and demands and preferences, changes in government policy, exposure to product liability claims, changes in accounting and tax rules, regulatory inquiries, requirements and approvals, contingent liabilities, manufacturing and product defects, history of losses, stock price volatility, future share sales, limited operating history, fluctuating financial results and currency fluctuations, uncertainty as to the Company's ability to meet its development and commercialization milestones, uncertainties as to development and manufacturing of a commercially viable product, reliance on external suppliers and development firms, fluctuations in the market prices of the Company's securities, possible future sales by the Company's shareholders of their securities, limited operating history of the Company, the development stage of the Company and its lack of revenues or earnings, fluctuations of the Company's financial results, the possibility that the Company is not able to maintain its "foreign private issuer" status, and the possibility of delisting from the Nasdaq or TSX exchanges.

Please also refer to the risk factors set forth starting on page 17 of the Company's Annual Information Form for the 2018 fiscal year, available on SEDAR at www.sedar.com, which are expressly incorporated by reference into the MD&A.

There may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. Other than as specifically required by law, the Company undertakes no obligation to

update any forward-looking statement to reflect events or circumstances after the date on which such statement is made, or to reflect the occurrence of unanticipated events, whether as a result of new information, future events or results or otherwise. Investors are cautioned that any such statements are not guarantees of future performance and that actual results or developments may differ materially from those projected in the forward-looking statements. Accordingly, investors should not place undue reliance on forward-looking statements.

***History and Business***

The Company is the successor corporation formed pursuant to two separate amalgamations under the *Business Corporations Act* (Ontario) on July 28, 2008. Titan does not have any subsidiaries.

The address of the Company's corporate office and its principal place of business is 170 University Avenue, Suite 1000, Toronto, Ontario, Canada M5H 3B3.

***Overall Performance***

During the three months ended March 31, 2019 the Company raised gross proceeds, including the 15% over allotment exercised by the Agent, of approximately $ 28,750,000 ($25,426,744 net of closing cost including cash commission of $2,012,500). The Company generated a net and comprehensive loss of $28,282,880, which included research and development expenditures of $14,408,612 and a loss on the change in fair value of warrants of $10,476,625.

The Company's business is focused on research and development through to the commercialization of computer-assisted robotic surgical technologies for application in minimally invasive surgery ("MIS"). The Company is developing the SPORT Surgical System, a single-port robotic surgical system comprised of a surgeon-controlled patient cart that includes a 3D high definition vision system and multi-articulating instruments for performing MIS procedures, and a surgeon workstation that provides the surgeon with an advanced ergonomic interface to the patient cart and a 3D endoscopic view inside the patient's body during MIS procedures. The Company intends to initially pursue focused surgical indications for the SPORT Surgical System, which may include one or more of gynecologic, urologic, colorectal or general abdominal procedures.

Development of the SPORT Surgical System has proceeded with input from surgeons and operating room staff experienced in minimally invasive surgery and, consultation with medical technology development firms and input from the Company's Surgeon Advisory Board (the "Surgeon Advisory Board") comprised of surgeons who specialize in minimally invasive surgery. This approach has allowed the Company to design a robotic surgical system that is intended to include the traditional advantages of robotic surgery, including 3D stereoscopic imaging and restoration of instinctive control, as well as new and enhanced features, including an advanced surgeon workstation incorporating a 3D high definition display providing a more ergonomically friendly user interface and a patient cart with enhanced instrument dexterity. Overall, the surgical system is designed to be adapted to the needs of the surgeon, with the intent that the system will appeal to a broader array of surgeons than systems that do not provide such adjustability.

The SPORT Surgical System patient cart is being developed to deliver interactive multi-articulating instruments and a 3D high definition vision system into a patient's abdominal body

cavity through a single access port. The design of the patient cart includes an insertion tube of approximately 25 millimeter (mm) diameter. The insertion tube includes an integrated 2D wide-angle camera module that once inserted, provides visualization for optimal positioning of the camera insertion tube by the bedside assistant under the guidance of the surgeon. Once the camera insertion tube is inserted and positioned in the body, a separate steerable, 3D high definition endoscopic camera is configured to deploy into a working configuration wherein the camera module and multi-articulating instruments can be controlled by a surgeon via the workstation. The reusable multi-articulating, snake-like instruments are designed to couple with sterile detachable single patient use robotic end effectors that would provide first use quality in every case and eliminate the reprocessing of the complete instrument. The use of reusable (for a specific number of uses) robotic instruments and single patient use end effectors is intended to minimize the cost per procedure without compromising surgical performance. The patient cart is also designed to include a mast, a boom and wheels for optimal configurability for a variety of surgical indications and the ability to be maneuvered within the operating room, or redeployed within hospitals and surgical centers, where applicable.

As part of the development of the SPORT Surgical System, the Company is developing a robust training curriculum and post-training assessment tools for surgeons and surgical teams. The proposed training curriculum is planned to include cognitive pre-training, psychomotor skills training, surgery simulations, live animal and human cadaver lab training, surgical team training, troubleshooting and an overview of safety. Post-training assessment will include validation of the effectiveness of those assessment tools. On September 18, 2018, the Company announced the successful completion of 14 core surgical skills simulation modules for use with the SPORT Surgical System surgeon workstation. The successful demonstration and delivery of these modules was a significant development in the first phase of the comprehensive surgeon training curriculum that the Company is planning for its SPORT Surgical System.

The Company continuously evaluates its technologies under development for intellectual property protection through a combination of trade secrets and patent application filings. As of March 31, 2019, the Company had ownership of 33 patents and 75 patent applications. The Company has accelerated the filing and prosecution of patents that management believes will validate the novelty of its unique technology, and in turn, support the value of the entire franchise. Early evidence of success with this initiative has been the rapid growth of its patent portfolio from 12 issued patents at December 31, 2016 to 33 issued patents as of March 31, 2019. The Company anticipates further expanding its patent portfolio by filing additional patent applications as it progresses in the development of robotic surgical technologies and potentially, by licensing suitable technologies.

As part of its development and commercialization efforts, the Company has established certain milestones that it uses to assess its progress towards developing commercially viable robotic surgical technologies. These milestones relate to technology and design advancements as well as to targeted dates for preclinical and clinical studies and completion of regulatory submissions. To assess progress, the Company regularly tests and evaluates its technology. If such evaluations indicate technical defects or failure to meet cost or performance goals, the Company's commercialization schedule could be delayed and potential purchasers of its initial commercial systems may decline to purchase them or may choose to purchase alternative technologies.

Among other things, the future success of the Company is substantially dependent on continuing its research and development program, including the ongoing support of any outsourced research and development suppliers.

In addition to being capital intensive, research and development activities relating to the sophisticated technologies that the Company is developing are inherently uncertain as to future success and the achievement of desired results. If delays or problems occur during the Company's ongoing research and development activities, important financial and human resources may need to be diverted toward resolving such delays or problems. Further, there is material risk that the Company's research and development activities may not result in a functional, commercially viable, manufacturable product, or one that is approved by regulatory authorities.

Previously, for the year ended 2018, the Company achieved all of its milestones as published in the Company's Annual Information Form for the 2018 fiscal year. The Company continued this trend of accomplishment through the first three months ended March 31,2019, substantially completing its published milestone which was to document the results of confidence build unit testing, implement subsystem design improvements and initiate the scheduling of a preliminary audit of quality system by a European Notified Body.

As previously announced, the Company selected three Centers of Excellence (strategic facilities) for preclinical studies in the U.S. and Europe, which are:

- Florida Hospital Nicholson Center in Celebration, Florida;
- Columbia University Medical Center in New York, New York; and
- Institut Hospitalo-Universitaire de Strasbourg ("IHU Strasbourg") in Strasbourg, France.

Ahead of its published milestone, on September 25, 2017, the Company announced the completion of the world's first gynecologic, colorectal and urologic single port robotic procedures using its advanced prototype SPORT Surgical System at the Florida Hospital Nicholson Center in Celebration, Florida. Since that time, the Company has announced that surgeons have completed critical surgical tasks integral to gynecologic procedures using advanced prototypes of the SPORT Surgical System at Columbia University Medical Center's surgical simulation center in New York, New York and at the Institute of Image-Guided Surgery at IHU Strasbourg.

To date, 12 experienced robotic surgeons from three continents have performed 43 live animal studies and two human cadaver studies. The studies performed include a broad array of procedures commonly performed by gynecologic, urologic, colorectal, bariatric, and general surgeons. The surgeons who performed these studies have prepared and submitted related abstracts for peer review, and have presented at clinical education meetings, including:

1. **Multi-disciplinary applications of a new robotic platform** by Barbara Seeliger, MD and Lee Swanstrom, MD (IHU Strasbourg), accepted and presented as a poster at the Society of American Gastrointestinal and Endoscopic Surgeons Meeting, Seattle, WA. (April 2018);

2. **Single-port prostatectomy using SPORT Surgical System** by Eric Barret, MD (Institut Mutualiste Montsouris, France), accepted and presented as a poster at the EAU Section of Urology Technology Meeting, Modena, Italy, (May 2018);

3. **Multispecialty single port robotic technology applied in the live animal model: proof of concept** by Travis Rogers, MD, Eduardo Parra Davila, MD, Vipul Patel, MD (all from Florida Hospital), Ricardo Estape, MD (South Miami GOG) and Armando Melani, MD (IRCAD Brazil), accepted and presented as a poster at the Society of Robotic Surgery Meeting, Stockholm, Sweden (June 2018);

4. **Feasibility of single-port partial nephrectomy using SPORT surgical system** by Eric Barret, MD (Institut Mutualiste Montsouris, France), accepted and presented as a poster at Society of Robotic Surgery Meeting, Stockholm, Sweden (June 2018);

5. **Single-port robotic partial and hemi nephrectomy using a novel single port robotic platform** by Sebastien Crouzet, MD (University of Lyon, France) and Barbara Seeliger, MD (IHU Strasbourg), accepted and presented at EAU Robotic Urology Section Meeting, Marseille, France (September 2018);

6. **Reverse Objective Structured Assessment of Technical Skills (Reverse-OSATS) as a means of measuring the capability of the Titan Medical SPORT Surgical System on core surgical principles** by Chetna Arora, MD, Arnold P. Advincula, MD (both from Columbia University Medical Center) and William B. Burke, MD (Stony Brook Cancer Center), accepted and presented at Society of European Robotic Gynecologic Surgeons Meeting, Milan, Italy (September 2018);

7. **Multispecialty single port robotic technology applied in the live animal model: proof of concept** by Travis Rogers, MD, Eduardo Parra Davila, MD, Vipul Patel, MD (all from Florida Hospital), Ricardo Estape, MD (South Miami GOG) and Armando Melani, MD (IRCAD Brazil), accepted and presented at World Congress of Endourology Meeting, Paris, France (September 2018);

8. **Feasibility of single-port partial nephrectomy using SPORT surgical system** by Eric Barret, MD (Institut Mutualiste Montsouris, France) Accepted and presented at World Congress of Endourology Meeting, Paris, France, (September 2018); and

9. **Reverse Objective Structured Assessment of Technical Skills (Reverse-OSATS) as a means of measuring the capability of the Titan Medical SPORT Surgical System on core surgical principles** by Chetna Arora, MD, Arnold P. Advincula, MD (both from Columbia University Medical Center) and William B. Burke, MD (Stony Brook Cancer Center), accepted at American Association of Gynecologic Laparoscopists World Congress, Las Vegas, NV (November 2018).

Further, several of these surgeons collaborated to author a manuscript that was published January 2019 in the highly-regarded, peer-reviewed journal *Surgical Endoscopy*: and is titled **Enabling**

**single-site laparoscopy: the SPORT platform** by Barbara Seeliger[1] · Michele Diana[1] · Jelle P. Ruurda[2] · Konstantinos M. Konstantinidis[3] · Jacques Marescaux[1] · Lee L. Swanström[1,4]

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2 Department of Surgical Oncology, University Medical Center, Utrecht, Utrecht, Netherlands
3 Department of General, Bariatric, Laparoscopic and Robotic Surgery, Athens Medical Center, Athens, Greece
4 Division of GI/MIS, The Oregon Clinic, Portland, OR, USA

***Discussion of Operations***

The Company incurred a net and comprehensive loss of $28,282,880 during the three months ended March 31, 2019, compared with a net and comprehensive loss of $808,699 for the three months ended March 31, 2018. This increase in net and comprehensive loss for the period is primarily attributed to a large loss from the change in fair value of warrants in 2019 compared to a gain in first quarter 2018, and by substantially higher research and development expenditures in 2019 compared to 2018. In addition, the net and comprehensive loss was increased by the charge of costs to the warrants issued in the first quarter of 2019, which was not incurred during the same period of 2018.

During the three months ended March 31, 2019, the Company continued to support strategic product development and manufacturing relationships with qualified subcontractors, carrying on efforts to globally secure the Company's intellectual property through the patent and licensing process, and continue the development of the Company's robotic surgical system.

Research and development expenditures (all of which were expensed in the period), for the three months ended March 31, 2019 and March 31, 2018, respectively, were as follows:

| **Research and Development Expenditures** | **Three Months Ended March 31, 2019** | **Three Months Ended March 31, 2018** |
|---|---|---|
| Intellectual property development | $ 2,460 | $ 5,000 |
| Product development | 14,406,152 | 3,269,074 |
| Total | $ 14,408,612 | $ 3,274,074 |

Research and development expenditures increased considerably in the three months ended March 31, 2019 compared to the same period in 2018. This increase was primarily due to an increase in available funding in 2019 that allowed the Company to accelerate product development in 2019, compared to 2018.

Other expenses, excluding the research and development discussed above and excluding finance income (costs) and Foreign exchange, general expenses for the three months ended March 31, 2019, were $1,700,481 compared to $1,720,644 for the comparable period in 2018. The small decrease is primarily attributable to lower stock based compensation and professional fees partially offset by an increase in insurance expense.

The loss attributed to the change in fair value of warrants for the three months ended March 31, 2019 was $10,476,625 compared to gain of $3,642,574 for the same period in 2018. The change of $14,119,199 reflects a significant increase in the fair value of warrants in 2019 compared to 2018.

The Company realized $23,031 of interest income on its cash and cash-equivalent balances during the three months ended March 31, 2019, and $28,292 for the same period in 2018. This decrease in interest income is primarily attributed to lower cash balances in its money market account prior to the equity raise of March 21, 2019 compared to the cash balances through the quarter ended March 31,2018.

For a discussion with regard to the status of the development of the SPORT Surgical System, please see "*Development Objectives*" below.

***Summary of Quarterly Results***

The following is selected financial data for each of the eight most recently completed quarters, derived from the Company's financial statements and calculated in accordance with IFRS. Basic and diluted loss per share figures are calculated on the basis of the 30:1 consolidation of common shares.

| | **Three Months Ended March 31, 2019** | **Three Months Ended December 31, 2018** | **Three Months Ended September 30, 2018** | **Three Months Ended June 30, 2018** | **Three Months Ended March 31, 2018** | **Three Months Ended December 31, 2017** | **Three Months Ended September 30, 2017** | **Three Months Ended June 30, 2017** |
|---|---|---|---|---|---|---|---|---|
| Net sales | - | - | - | - | - | - | - | - |
| Net and Comprehensive Loss (gain) from operations | $28,282,880 | $8,410,702 | $7,534,456 | $5,885,415 | $808,699 | $12,829,980 | $13,902,817 | $1,865,913 |
| Basic and diluted loss per share | $1.22 | $0.41 | $0.41 | $0.47 | $0.07 | $1.20 | $1.80 | $0.30 |

Significant changes in key financial data from the three months ended June 30, 2017 through the three months ended March 31, 2019 reflect the ongoing development of the SPORT Surgical System. Also included is the requirement to revalue the Company's warrant liability at fair value, with subsequent changes recorded through net and comprehensive loss for the period.

During the first quarter of 2019, the Company had a net and comprehensive loss of $28,282,880 compared to a loss of $808,699 for the same period in 2018. This increase in loss of $27,474,1813 is primarily attributed to substantially higher research and development expenditures in 2019 of $14,408,612 compared to $3,274,074 in 2018 and to the loss on change in fair value of warrants in 2019 of $10,476,625 compared to a gain of $3,642,574 in 2018

***Liquidity and Capital Resources***

The Company currently does not generate any revenue (other than interest income on its cash balances) and accordingly it is primarily dependent upon equity financing for any additional funding required for development and operating expenses.

The ability of the Company to arrange financing in the future will depend in part upon prevailing capital market conditions and the business success of the Company. There can be no assurance that the Company will be successful in its efforts to arrange additional financing on terms satisfactory to the Company. If adequate funds are not available, or are not available on acceptable

terms, the Company may not be able to take advantage of opportunities, or otherwise to continue its technology development program at its current pace. If additional financing is raised by the issuance of shares or convertible securities from treasury, control of the Company may change and shareholders may suffer additional dilution, or loss of their investment.

The Company had $23,610,440 of cash and cash equivalents on hand and accounts payable and accrued liabilities of $6,495,644 excluding warrant liability at March 31, 2019, compared to $20,470,379 and $2,914,191 respectively, at March 31, 2018. The Company's working capital as at March 31, 2019 was $27,964,161 excluding warrant liability, compared to $22,127,676 at March 31, 2018.

Below is a table that sets out the various series of Titan warrants that were previously issued, using historic rates. The disclosure of the potential proceeds in the last column of the table below assumes all warrants are exercised on or before the expiry date. However, there is no assurance that any warrants will be exercised prior to their expiry. The chart has been updated to reflect the number of warrants issued and outstanding post 30:1 consolidation, as at June 30, 2018.

| | Issue Date | Expiry Date | Number Issued | Number Outstanding | Exercise Price (CDN $) |
|---|---|---|---|---|---|
| TMD.WT.F | November 16, 2015 | November 16, 2020 | 233,740 | 233,740 | $48.00 |
| TMD.WT.G | February 12, 2016 | February 12, 2021 | 389,027 | 386,694 | $30.00 |
| TMD.WT.G | February 23, 2016 | February 12, 2021 | 58,226 | 58,226 | $30.00 |
| TMD.WT.H | March 31, 2016 | March 31, 2021 | 501,831 | 501,831 | $36.00 |
| TMD.WT.H | April 14, 2016 | March 31, 2021 | 75,275 | 75,275 | $36.00 |
| TMD.WT.I | September 20, 2016 | September 20, 2021 | 569,444 | 569,444 | $22.50 |
| TMD.WT.I | October 27, 2016 | September 20, 2021 | 67,667 | 67,667 | $22.50 |
| NOT LISTED | March 16, 2017 | March 16, 2021 | 357,787 | 355,253 | $15.00 |
| NOT LISTED | June 29, 2017 | June 29, 2022 | 1,612,955 | 75,810 | $6.00 |
| NOT LISTED | July 21, 2017 | June 29, 2022 | 370,567 | 370,567 | $6.00 |
| NOT LISTED | August 24, 2017 | August 24, 2022 | 563,067 | 563,067 | $6.00 |
| NOT LISTED | December 5, 2017 | December 5, 2022 | 1,533,333 | 1,533,333 | $18.00 |
| NOT LISTED | April 10, 2018 | April 10, 2023 | 1,126,665 | 1,126,665 | $10.50 |
| NOT LISTED | May 10, 2018 | April 10, 2023 | 168,889 | 168,889 | $10.50 |
| NOT LISTED | August 10, 2018 | August 10, 2023 | 7,679,574 | 6,661,068 | US $3.20 |
| NOT LISTED | March 21, 2019 | March 21, 2024 | 8,455,882 | 8,455,882 | US $4.00 |
| **TOTAL** | | | **23,763,929** | **21,203,411** | |

***Development Objectives***

The Company uses a combination of internal resources and external development firms to execute the research, development and commercialization plan for the Company's robotic surgical system.

The results achieved by surgeons in operating prototypes in animal and cadaver studies during 2017 validated the potential for single incision surgeries to be performed with the SPORT Surgical System. The studies also yielded valuable insights on meaningful improvements that could be made to the system before proceeding toward regulatory clearance and commercialization.

Accordingly, product development was accelerated in 2018 in preparation for commercial manufacturing, including hardware and software development at all levels, involving the workstation, patient cart, cameras and light source, instruments, and disposable components that facilitate successful surgery. Product improvements were completed and implemented in a capital equipment engineering confidence build of an improved prototype in December of 2018. System initial performance evaluation was completed during the first quarter of 2019. On April 30, 2019 the Company announced that it had achieved hardware design freeze for its single-port robotic surgery system.

The Company intends to proceed with summative usability evaluation tests and validation studies required for supporting regulatory filings in 2019. Previously, in 2018 the Company confirmed with the Food and Drug Administration of the United States Department of Health and Human Services (the "FDA"), that confirmatory human data will be required for its planned regulatory submission. The performance of human surgeries with the SPORT Surgical System will require an Investigational Device Exemption ("IDE") from the FDA, which must be submitted and approved in advance. Further, the recruitment of surgeons from multiple hospital sites will be necessary to perform the surgeries. Each of these sites will require approval of their independent Institutional Review Board ("IRB") to approve the studies. During the second and third quarters of 2019, the Company plans to continue to pursue the recruitment of surgeons and hospitals for the studies, IDE approval by the FDA, and approvals by the IRB of each hospital, in preparation for the confirmatory human studies planned for completion during the fourth quarter.

A complete estimate of the timing and costs for development milestones beyond 2019 is speculative. The Company estimates that a minimum of U.S. $58.8 million will be required to fund its operations to the end of Q1 2020. Based on cash and cash equivalents on hand, including deposits with suppliers as of March 31, 2019, the Company believes that it will need to raise approximately $35 million to fund it operations to the end of the first quarter of 2020. This includes projected capital resources necessary for the Company to submit its 510(k) application to the FDA and apply for CE Marking which indicates that a product for sale within the European Economic Area (EEA) has been assessed to conform with health safety and environmental protection requirements. If successful with those efforts, the Company then expects to proceed with early commercialization activities in the U.S. in 2020. Given the uncertainty of, among other things, product development timelines, regulatory processes and requirements (such as live animal and human cadaver studies and confirmatory human studies), as well as the availability of required capital to fund development and operating costs, actual costs and development times may exceed management's current expectations and an accurate estimate of the future costs of the regulatory phases and development milestones beyond the first quarter of 2020 is not possible at this time.

The Company's current plan is to raise sufficient financing and continue the development and commence commercialization of the SPORT Surgical System at estimated incremental costs, and according to the updated timeline, as set forth in the table below.

***Current Development Plan***

The Company anticipates development costs through to the end of the first quarter of 2020 to be as set out in the table below (the "Current Development Plan").

| ***Milestone Number*** | ***Development Milestones*** | ***Estimated Cost (in U.S. million $)*** | ***Schedule for Milestone Completion*** | ***Comments*** |
|---|---|---|---|---|
| Milestone 1 | Prototype, test and procure surgeon feedback on revised workstation controls<br><br>Complete software and hardware change requirements and finalize computer and software architecture for production systems<br><br>Complete revisions to instrument and lens wash system and demonstrate performance | | Q2 2018 | *Completed* |
| Milestone 2 | Complete Camera Insertion Tube (CIT) engineering confidence build based on improved design<br><br>Complete design of SPORT Surgical System surgeon workstation and patient cart for engineering confidence build<br><br>Complete and demonstrate full suite of simulation software for beta test | | Q3 2018 | *Completed* |
| Milestone 3 | Complete SPORT Surgical System capital equipment engineering confidence build based on improved design | | Q4 2018 | Completed |
| Milestone 4 | Document results of confidence build unit testing, implement subsystem design improvements and schedule preliminary audit of quality system by European Notified Body | | Q1 2019 | *Completed* |
| Milestone 5 | Update system design and related hardware and software documentation<br><br>Initiate SPORT Surgical System Design Freeze<br><br>Verify production system operation with clinical experts under rigorous formal (summative) human factors evaluation under simulated robotic manipulation exercises<br><br>Initiate preclinical live animal (swine) and cadaver studies according to final protocols for FDA submittal<br><br>Submit draft protocols to FDA in Q-submission(s) for comment | 17.8[(1)] | Q2 2019 | *Completed*<br><br>*Completed* |

| *Milestone Number* | *Development Milestones* | *Estimated Cost (in U.S. million $)* | *Schedule for Milestone Completion* | *Comments* |
|---|---|---|---|---|
| Milestone 6 | Complete and document preclinical live animal (swine) and cadaver studies according to final protocols for FDA submittal<br><br>Submit Investigational Device Exemption (IDE) application to FDA<br><br>Obtain ISO 13485 Certification<br><br>Receive IDE approval from FDA | 17.3[(2)] | Q3 2019 | |
| Milestone 7 | Complete and document human confirmatory studies under IDE protocols for FDA submittal<br><br>Submit Technical File to European Notified Body for review for CE Mark<br><br>Submit 510(k) application to FDA | 15.6[(3)] | Q4 2019 | |
| Milestone 8 | Ongoing software development and implementation.<br><br>Planning and preparation for manufacturing and commercialization. | 8.1[(4)] | Q1 2020 | |
| | **TOTAL** | 58.8 | | |

(1) Includes research and development costs estimated at approximately US $16.4 million, and general and administrative costs estimated at approximately US $1.4 million.
(2) Includes research and development costs estimated at approximately US $15.9 million, and general and administrative costs estimated at approximately US $1.4 million.
(3) Includes research and development costs estimated at approximately US $14.2 million, and general and administrative costs estimated at approximately US $1.4 million.
(4) Includes research and development costs estimated at approximately US $6.6 million, and general and administrative costs estimated at approximately US $1.5 million.

The Company recently updated its Milestone table with the expectation that the submittal of its IDE application to the FDA would take place early during the third quarter 2019 following successful completion of prerequisite animal and cadaver studies during the second quarter.

The Company remains on track to file its 510(k) application with the FDA by year end 2019.

Upon completion of the development of the SPORT Surgical System and following receipt of applicable regulatory clearance in the United States, the Company intends to utilize a direct sales force and to initiate marketing of the SPORT Surgical System to hospitals.

Due to the nature of technology research and development, there is no assurance that these objectives will be achieved, and there can be no assurance with respect to the time or resources that may be required. The Company expects that additional specific milestones could be identified as the development of its SPORT Surgical System progresses, or existing milestones, budgets and

the schedule for completion of each milestone may change depending on a number of factors including the results of the Company's development program, clarification of or changes to regulatory requirements, the availability of financing and the ability of development firms engaged by the Company to complete work assigned to them. The total costs to complete the development of the Company's SPORT Surgical System as referenced above are only an estimate based on current information available to the Company and cannot yet be determined with a high degree of certainty, and the costs may be substantially higher than estimated. Please see "*Forward-Looking Statements*".

Please also refer to the risk factors set forth starting on page 16 of the Company's Annual Information Form for the 2018 fiscal year, available on SEDAR at www.sedar.com.

***Financings***

***Offerings During Q1 2019***

On March 21, 2019, Titan completed an offering of securities made pursuant to an agency agreement dated March 18, 2019 between the Company and Bloom Burton Securities Inc. (the "Agent"). The Company sold 8,455,882 Units under the Offering at a price of US $3.40 per Unit for gross proceeds of approximately $28,750,000 ($25,426, 744 net of closing cost including cash commission of $2,012,500). Each Unit consisted of one Common Share of the Company and one Common Share purchase warrant, each warrant entitles the holder thereof to acquire one Common Share of the Company at an exercise price of US $4.00 and expiring March 21, 2024. The warrants were valued at $15,897,059 based on the value determined by the Black-Scholes model and the balance of $12,852,941 was allocated to common shares.

Pursuant to the agency agreement, in addition to the cash commission paid to the Agent, broker warrants were issued to the Agent which entitle the holder to purchase 591,911 Common Shares at a price of USD $3.40 per share prior to expiry on March 21, 2021. The broker warrants were valued using the Black-Sholes model and the value of $864,190 was accounted for as an increase in the closing costs and allocated between the shares and the warrants.

During the quarter ended March 31, 2019, 1,018,506 warrants were exercised for total proceeds of $3,259,219. The fair value of the exercised warrants was $3,742,824 which was reclassed from warrant liability to common stock.

***Offerings During Q3 2018***

On August 10, 2018, the Company completed an offering of securities made pursuant to an agency agreement dated August 7, 2018 between the Company and Bloom Burton Securities Inc. ("Bloom Burton"). The Company sold 7,679,574 units under the offering price of $2.50 per unit for gross proceeds of approximately $19,198,935 ($17,464,711 net of closing cost including cash commission of $1,343,925). Each unit consisted of one Common Share of the Company and one Common Share purchase warrant, each warrant entitling the holder to acquire one Common Share at an exercise price of $3.20 and expiring August 10, 2023.

### *Offerings During Q2 2018*

On April 10, 2018, the Company completed an offering of securities pursuant to an agency agreement dated April 3, 2018 between the Company and Bloom Burton. The Company sold 1,126,665 units under the offering at a price of CDN $9.00 per unit for gross proceeds of approximately $8,035,941 ($7,211,320 net of closing costs including cash commission of $562,516). Each unit consisted of one common share and one warrant, each warrant entitling the holder thereof to acquire one common share at an exercise price of CDN $10.50 and expiring April 10, 2023.

On May 10, 2018, the Company announced the exercise of the over-allotment option granted to Bloom Burton as agent for its offering, at a price of CDN $9.00 per unit, completed on April 10, 2018 and the Company sold an additional 168,889 units at the offering price for additional gross proceeds of $1,189,856 ($1,100,238 net of closing costs including cash commission of $76,988). Each unit consisted of one Common Share of the Company and one warrant, each warrant entitling the holder thereof to acquire one Common Share at an exercise price of CDN $10.50 and expiring April 10, 2023.

### *Off-Balance Sheet Arrangements*

As of the date of this report, the Company had no off-balance sheet arrangements.

### *Outstanding Share Data*

The following table summarizes the outstanding share capital as of the date of this MD&A:

| **Type of Securities** | **Number of Common Shares issued or issuable upon conversion** |
|---|---|
| Common Shares | 31,150,237 |
| Stock options[(1)] | 965,782 |
| Warrants | 21,203,411 |
| Broker warrants[(2)] | 1,328,089 |

Notes:

(1) The Company has outstanding options enabling certain employees, directors, officers and consultants to purchase Common Shares. Please refer to note 6(b) of the Unaudited Condensed Interim Financial Statements for terms of such options.

(2) A total of 1,510,104 broker warrants were issued in connection with the March 2017, June 2017, December 2017, April 2018, August 2018 and March 2019 offerings. As of the date hereof, 1,328,089 broker warrants remain outstanding. Details include the following:

- Pursuant to the agency agreement in respect of the March 2017 offering, in addition to the cash commission paid to the agents, 50,005 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of CDN $10.50 for a period of 24 months following the closing date.
- Pursuant to the agency agreement in respect of the June 2017 offering, in addition to the cash commission paid to the agents, 135,473 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of CDN $4.50 for a period of 24 months following the closing date.
- Pursuant to the agency agreement in respect of the December 2017 offering, in addition to the cash commission paid to the agents, 105,350 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of CDN $15.00 for a period of 24 months following the closing date.

- Pursuant to the agency agreement in respect of the April 2018 offering, in addition to the cash commission paid to the agents, 89,795 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of CDN $9.00 for a period of 24 months following the closing date.
- Pursuant to the agency agreement in respect of the August 2018 offering, in addition to the cash commission paid to the agents, 537,570 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of US $2.50 for a period of 24 months following the closing date.
- Pursuant to the agency agreement in respect of the March 2019 offering, in addition to the cash commission paid to the agents, 591,911 broker warrants were issued to the agents. Each broker warrant entitles the holder thereof to acquire one Common Share at the price of US $3.40 for a period of 24 months following the closing date.

## *Accounting Policies*

The accounting policies set out in the notes to the unaudited condensed interim financial statements for the three months ended March 31, 2019 and the audited financial statements for the years ended December 31, 2018 have been applied in preparing the unaudited condensed interim financial statements for the three months ended March 31, 2019, and the comparative information presented in the unaudited condensed interim financial statements for the three months ended March 31, 2018.

These financial statements have been prepared in accordance with accounting principles applicable to going concern, which contemplates that the Company will be able to realize its assets and settle its liabilities in the normal course as they come due during the normal course of operations for the foreseeable future. The Company has shareholders' deficiency of $201,220,574 and current losses of $28,282,880. The Company currently does not generate any revenue (other than interest income on its cash balances) and accordingly it is primarily dependent upon equity financing for any additional funding required for development and operating expenses. The Company expects that approximately US $35 million in incremental funding is needed, for the next 12 months to maintain its currently anticipated pace of development. If additional funding is not available, the pace of the Company's product development plan may be reduced. These conditions indicate the existence of a material uncertainty that may cast significant doubt on the ability of the Company to continue as a going concern if additional funding is not secured. However, based on internal forecasts, Management believes that the Company has sufficient funds to meet its obligations under a reduced development plan, if necessary, for the ensuing twelve months.

The preparation of financial statements in conformity with IAS 34 requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of provisions at the date of the financial statements and the reported amount of expenses during the period. Financial statement items subject to significant judgement include, (a) the measurement of stock based compensation and (b) the fair value estimate of the initial measurement of new warrant liabilities. While management believes that the estimates and assumptions are reasonable, actual results may differ.

### *(a) Stock Options*

The Black-Scholes model used by the Company to determine fair values of stock options and warrants was developed for use in estimating the fair value of the stock options and warrants. This model requires the input of highly subjective assumptions including future stock price volatility and expected time until exercise. Changes in the subjective input assumptions can materially affect the fair value estimate.

### *(b) Warrant Liability*

In accordance with IAS 32, since the exercise price of new warrants are not a fixed amount, they are denominated in a currency (Canadian dollar) other than the Company's functional currency (U.S. dollar), as well as the warrants issued August 10, 2018 with the cashless exercise option. The warrants are accounted for as a derivative financial liability. The warrant liability is initially measured at fair value and subsequent changes in fair value are recorded through net and comprehensive Loss for the period. The accounting guidance for fair value measurements prioritizes the inputs used in measuring fair value into the following hierarchy:

**Level 1** – Quoted prices (unadjusted) in active markets for identical assets or liabilities;

**Level 2** – Inputs other than quoted prices included within Level 1 that are directly or indirectly observable;

**Level 3** – Unobservable inputs in which little or no market activity exists, therefore requiring an entity to develop its own assumptions about the assumptions that market participants would use in pricing.

The fair value of the Company's warrant liability is initially based on level 2 (significant observable inputs) and at March 31, 2019 is based on level 1, quoted prices (unadjusted) in an active market, for the Company's listed warrants and level 2 for the Company's unlisted warrants.

### *Related Party Transactions*

During the quarter ended March 31, 2019, transactions between the Company and directors, officers and other related parties were related to compensation matters in the normal course of operations and are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

### *Financial Instruments*

The Company's financial instruments consist of cash and cash equivalents, amounts receivable, accounts payable and accrued liabilities and warrant liability. The fair value of these financial instruments approximates their carrying values, unless otherwise noted, due to the short-term maturities of these instruments or the discount rate applied.

### *Outlook*

By internal estimates, management believes there is an opportunity for the Company to access an unaddressed U.S. market that potentially may include more than $12 billion in capital equipment revenue and more than $3 billion in associated annual recurring revenue, including smaller hospitals and the underserved ambulatory surgery center market segment.

To date, experienced robotic surgeons performed 45 single-port procedures, including 43 live porcine and two cadaver studies, at the Company's three Centers of Excellence in the US and Europe using the SPORT Surgical System. These studies assisted in validating prototype performance in preclinical settings.

During the studies, essential areas for improvement of the surgical system were identified, including enhancements to the camera and light source, hand controls, instruments and the mechanisms of the patient cart and software throughout the system to ensure safe and reliable system operation. The final design is intended to address performance and usability requirements of prospective surgeon customers, as well as the needs of operating room support personnel and hospital administrators. The Company successfully completed, on schedule, the planned SPORT Surgical System capital equipment engineering confidence build based on the improved design by year-end 2018.

In the first quarter of 2019, the Company completed and documented the results of the confidence build unit testing, implemented subsystem design improvements and initiated the scheduling process of the preliminary audit of the Company's quality system by a European Notified Body.

On April 30, 2019, the Company announced hardware design freeze for its single-port robotic surgery system.

On May 1, 2019, the Company announced the appointment of Charles W. Federico as Chairman of the Board of Directors, effective immediately. The current Chairman, John Barker continues to serve as a Director an as Audit Committee Chair. Mr. Federico as a past Director of MAKO Surgical Corp., served as Chairman, Lead Director, Compensation Committee Chairman, Governance Committee Chairman and an Audit Committee Member from 2007 to 2013.

In 2019, management plans to continue to focus on product development and preparation for manufacturing, including hardware and software involving the workstation, patient cart, instruments, cameras and light sources, and disposable components that facilitate successful surgery.

In preparation for its planned FDA 510(k) application, the Company previously filed several Q-Submissions with the FDA to clarify in detail data required to support its submission. The associated Q-Submission milestone was achieved in 2018, well in advance of an earlier projection for completion in 2019. The Company plans to design and execute its studies based on the FDA's responses, with the intent of filing a fully compliant 510(k) application by year-end 2019.

More specifically, through its correspondence and discussions with the FDA, the Company has confirmed that in addition to preclinical live animal and cadaver data, confirmatory human data will be required for its planned regulatory submission. The performance of human surgeries with the SPORT Surgical System will require an Investigational Device Exemption ("IDE") from the FDA, which it intends to submit early during the third quarter for approval in advance of human confirmatory studies. The recruitment of surgeons from multiple hospital sites has been initiated and will be necessary to perform the surgeries. Each of these sites will require approval of their independent Institutional Review Board ("IRB") to approve the studies. During the second and third quarters of 2019, the Company expects to complete the recruitment of surgeons and hospitals for the studies, secure IDE approval by the FDA and approvals by the IRB of each hospital, in preparation for the confirmatory human studies planned for completion during the fourth quarter.

Over the next twelve months, the Company plans to raise additional capital to finance the development and commercialization of the SPORT Surgical System. The company will continue to explore alternative sources in order to minimize dilutive effects, including strategic partnerships,

private placements and debt. Management will continue to assess the reasonableness of development milestones, as well as timelines and related cost estimates, as financing is secured and development continues.

The Company continues to engage external technical experts and subcontractors with experience in key technical areas to provide an accelerated pathway to subsystems development with current technology. Further, the Company plans to continue to protect its intellectual property by securing additional patents. The pace at which the Company can carry out these activities will be substantially dependent on its ability to raise the necessary capital on a timely basis.

Additional information relating to the Company, including Titan's Annual Information Form for the 2018 fiscal year, is available on SEDAR at www.sedar.com.