

New Robotized Biomechanical Device for the Medical and Military Sectors That Assists and Improves Mobility and Walking Endurance



Stéphane Bédard
President, CEO &
Chairman of the Board
B-TEMIA Inc.

CEOCFO: *Mr. Bédard, B-TEMIA was founded in 2010, and your mission is regaining autonomy in mobility. Where are you today in applying that mission statement?*

Mr. Bédard: We have had the last 5 almost 6 years to create, invent and develop this new dermoskeletal technology, what we call a new generation of exoskeletons, known quite well in the field for medical applications, as well as for military applications. We have invented a new assistive device for walking and we call it a DERMOSKELETON™. For the last 5 years we have been developing this technology. Today, and over the last year, we are at the commercialization phase for the medical version of this technology, as well as trying to complete the design, or militarizing the design for future military applications. We are commercializing our product in Canada. We are a manufacturer, so we are assembling and manufacturing the device by ourselves.

CEOCFO: *Would you explain your DERMOSKELETON device? What it is and what is the science behind the device?*

Mr. Bédard: It is new science, but it is what we call in science a biomechanical device, a bio-robot. It is a robotized mechanical structure that can read your intention of movement and can react in accordance with the movement you want execute. It is a pure mechatronic device including electronic, software and mechanical components. It is robotized, so you have artificial intelligence, sensors and a computer. With those sensors we can interact with the body and interpret what the user's intentions are as they walk. Then with this information related to the user's gait, we are able to generate additional energy in the legs and assist the gait of the user.

CEOCFO: *How is it able to sense the intention?*

Mr. Bédard: Everything is related to the biomechanics of human locomotion. We are sensing the angulations of the leg and the position of each body segment in space. Then with all of that information, we are able to know exactly where the body is and where it wants to go. We are sensing the kinematics and the kinetic parameters of the gait. It is pure biomechanics and with those sensors we are able to sense exactly those parameters that are related to the gait and then when you know them it is possible to react properly to the gait that you want to execute.

CEOCFO: *Is it different person-to-person, or a general set of reactions?*

Mr. Bédard: Actually, everybody walks in a similar way, so basically the platform is entirely the same from person-to-person. However, when you fit someone with the device you have to readjust some parameters to optimize the device's response to the specific gait of the user. This allows us to have one device for everyone, but the clinician at the first fitting will adjust the device according to the user's preferences or the user's conditions.

CEOCFO: *What will be different in the military version?*

Mr. Bédard: The military version of our product will allow soldiers to be stronger and faster. The design is adapted to the application, so the mechanical structure is stronger and we are able to react more rapidly to the user's intentions. This is because a soldier would like to have the full flexibility to do everything that they want related to the speed, strength and flexibility of their mobility. This is why the software as well as the mechanical structure must be adjusted to those new conditions. Therefore, it is the same technology, but little adjustments are made to make sure that the device can react properly to those differences.

CEOCFO: *What is the military version used for? Is it to assist after an injury or an aid to a soldier?*

Mr. Bédard: Actually, it is more of a prevention tool for the military, as it enables them to prevent muscular skeletal injuries over time. It is used by healthy soldiers, to enable them to maintain their combat capabilities in terms of their

biomechanics to prevent chronic and acute injuries. The device can protect their lower extremities and keep the soldier combat ready for years, instead of them not being able to be deployed after a year because of back or knee pain. It is used to prevent injury for soldiers.

CEOCFO: *Has the military helped in funding for your product?*

Mr. Bédard: We have developed our technology and device on our own, but the military has been there to test the device, which has been very valuable. They are spending a great deal of resources and money to test the device and evaluate the performance of the device, then helping us to improve the design. That is the military's role and they are doing it quite well. We have been working for many years with the Canadian Forces, and today we are working with the US Army and some medical organizations in Europe. However, their goal is always the same. They want to test the device for a couple of weeks or a month, and will then provide feedback about the gap between how the device is performing and what they would like to see in the near future. That is the goal of our relationship with them.

CEOCFO: *Would you tell us about the product that is on the market today and how you are going forward with it?*

Mr. Bédard: It is mostly to adjust and adapt what we have today based on market feedback. Today we have our medical version called Keeogo™, for keep on going. Keeogo™ is a class 1 medical device and is presently sold in Canada. We successfully developed and put the first generation of this product on the market. At this point, the engineering and marketing teams are working with customers to make sure that the product will respond and address all needs. Keeogo™ is designed for individuals who have limited walking endurance or mobility issues such as individuals living with knee osteoarthritis, hip osteoarthritis, multiple sclerosis and Parkinson's disease. They may have problems climbing stairs, carrying an object for a certain distance or standing in line for a long period of time.

"These certainly are very exciting times for us as we look forward to the future."- Stéphane Bédard

CEOCFO: *Who are you marketing to in order to learn about Keeogo™? Are you working with doctors?*

Mr. Bédard: We are working with both patients and physicians. Keeogo™ has two main applications. One is for home use, and the second is for treatment in a rehabilitation center. The home use is more of a direct relationship with the patient. The patients want to use it at home for their own activities. Usually, they will come to see us or get in contact with us directly to buy or rent Keeogo™. Sometimes they are referred by their physicians, but they can also come directly to us. When we are working with a rehabilitation center, the application is a little bit different. In that setting, Keeogo™ is used as a rehab tool, where people are going two or three times per week, and the clinicians are working with patients. In that case, Keeogo™ is one tool amongst others to help the patient to exercise or just to retrieve some functionality that they may be losing.

CEOCFO: *How do you reach out to both groups? How do they find out about Keeogo™ and the company?*

Mr. Bédard: The B-TEMIA team is meeting with and presenting the device and our new tools to the rehab clinics directly. On the other side, we are getting a great number of phone calls from clinicians who want to obtain knowledge of our device. Our goal is to make sure that Keeogo™ is well known in the market. For the patient, they may see an article in a magazine or they may become acquainted with Keeogo™ through their associations and then they call us directly. That is the way that it is working at the moment.

CEOCFO: *Are there competing technologies on the market or in development?*

Mr. Bédard: Indirectly yes, but directly no. We are the only assistive device that can help people with walking, without interfering with their gait profile; Walking with the device is almost transparent for the user. That means that we can address the needs for the many applications in the field. We are the only device that can for example, be used by early stage multiple sclerosis patients, because that population just needs a little help to walk and they do not need a big walking robot to help them to move from point A to point B. We have a very distinctive and unique technology where we assist, but do not affect the gait of the patients. Therefore, our device can be used in any way that you want to. You can walk, run, play golf, or work in your backyard. You can do almost everything with Keeogo™. That means that we can address many markets that the other exoskeleton technologies on the market cannot.

CEOCFO: *Are you looking at partnerships or funding as you move forward?*

Mr. Bédard: Yes we are. We have many business opportunities around the world in the US and Europe, mainly. However, to contemplate them we need a better financial structure, and there are many ways to do that. Therefore, we are working with major players in field in the military sector, as well as the medical sector. We have signed a long term partnership with a major European player in France called Sagem (Safran). We are currently completing the design in the

military sector with them. Sagem provides us with very strong partnership support so that we can invest towards the completion of a military version and to reach the medical market. On the clinical side we are trying to find a similar player. Today, addressing all of those markets with the right product on our own is not possible, so we have to establish some partnerships with companies that are well positioned in their particular markets, but in need of the type of product that we are offering. These certainly are very exciting times for us as we look forward to the future.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine



B-TEMIA Inc.

**For more information visit:
www.b-temia.com**

**Contact:
Stéphane Bédard
418-653-1010 ext. 223
stephane.bedard2@b-temia.com**