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Q&A with Philippe Babin, CEO of Aeponyx Inc. developing Optical Chips using Silicon Photonics and Planar MEMS circuits to create Micro Optical Switches for Telecommunications and Data Center Applications that enable better and faster Video Streaming and Data Management

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CEOCFO: ***Mr. Babin, according to the AEPONYX™ Inc site, you are 'moving the cloud at the speed of light.' What is happening at AEPONYX?***
Mr. Babin: We are developing optical chips using Silicon Photonics and planar Micro-Electro-Mechanical-Systems (MEMS) circuits to create micro optical switches for telecommunications and data center applications. This will dramatically increase the amount of data transmitted by fiber optics at lower costs with much lower power usage. In the telecom sector alone, this represents a $1 billion market for our transceivers.

CEOCFO: ***What are the challenges with an optical chip?***
Mr. Babin: The key challenge was to come up with a new, low cost technology to help our clients build next generation networks using their already deployed fiber, something they must do to satisfy bandwidth growth while offering universal access to homes, business and mobile, including the upcoming 5G network.

CEOCFO: ***What is it that you understand about technology that is letting you do this, that is allowing you to come up with an appropriate product?***
Mr. Babin: Basically, the key invention, the novelty of AEPONYX, came from reusing existing technologies that were built to create very low-cost chips for any sort of application. For this, we are using MEMS (Micro-Electro-Mechanical-Systems) technology and processes that are used to build chips for mobile phones or automotive or to build sensors and gyroscopes. Using that low-cost technology as a starting point, we found a way to develop material properties capable of doing optical applications; the result, a micro optical chip. This approach enables us to increase the switching speed by a factor of 100, and reduce cost by up to 10 times.

CEOCFO: ***Are many people working in this area?***
Mr. Babin: Yes and no. There are many people working on silicon photonics technology. You will see new products developed by companies like Intel and Cisco. They are all using traditional silicon photonics to create applications for data centers. This is a known world. Our novelty is to use a different material, silicon nitride, combined with the MEMS, to create a revolutionary solution. This is another area where we are coming up with a lot of new IP in technology.

CEOCFO: ***What is it about this material that allows for a better, faster solution?***
Mr. Babin: The silicon nitride we use has lower losses than the silicon when it comes to transporting the light because it is a better conductor. That enables us to do longer distances and be able to support more power, which is exactly what the telecom industry needs.

CEOCFO: ***Where are you in the process now?***
Mr. Babin: At this moment we are at the prototyping level. In the few next months, we will be doing the first deliveries to customers, with multiple deliveries over the year, bringing us to commercial production in 2019.

CEOCFO: ***What has been the response from the people in technology that might use your product and that know what you are doing?***
Mr. Babin: The response has been extremely positive from the equipment manufacturers that we have been talking to in telecom, our primary market. Customers recognize the potential of our solution to help them solve their key challenges and are very much engaged in helping us move forward, doing audits, better understanding our tech, and they are absolutely ready to receive and start doing the testing on the first prototypes coming up in the next quarter.

CEOCFO: ***Would you explain about the energy efficiency?***
Mr. Babin: If you are able to do your switching in a network on a purely optical level, you reduce the level of the power used. Basically, if you are in a data center, every time a computer communicates to another one you have to use a laser pair. Currently, you must convert light to electricity and then back to light for the fiber; every conversion costs power. By keeping the switching to an optical level, you reduce the overall power usage. This results in huge energy savings in both telecom and data center applications.

"We will soon be one of the reasons you can better stream films to your home, manage vast amounts of data in your business, and can ensure the quality and speed you expect on your mobile devices."- Philippe Babin

CEOCFO: ***Are people looking at the energy usage from a cost basis, from an environmental basis or maybe a little of both?***
Mr. Babin: It is a little of both. As an example, in ten years, data centers will be using 9% of worldwide electricity. This will represent 6% of global greenhouse gas emissions so it has an enormous footprint. Therefore, there is a lot of effort being made to improve the power efficiency inside data centers. People are working on new servers, new architecture and new switches that are minimizing the usage of power. This is an important problem that we have to fix. At the same time, I must admit that our first customer wins were based more on being able to deliver more data at lower cost, which is the key concern of most of the operators, with power reduction (and environmental impact) secondary benefits.

CEOCFO: ***What has changed since your original concept? What have you learned through the testing so far within AEPONYX?***
Mr. Babin: When we started the company, our initial idea was to resell existing systems for telecom operators. When we met with customers, however, we learned about the performance limitations of products on the market. It became clear that there was a big opportunity for improvement and, fortunately, we found two university scientists in Montreal working on a key solution: combining silicon photonics with MEMS. We ultimately joined forced to prove the concept, and to deploy the technology. We acquired a worldwide exclusive license on that initial patent, then started building on the technology and adding more patents. Now we have about nine patents and there is another group of five patents coming up. We have been working with the universities on developing the key processes compatible with world-leading industrial foundries. The key learning for us was to listen well to customer's needs and requirements and, knowing the complexity of the solution, to be patient. Our investors have also been extremely patient in enabling us to develop such technologies as financing photonics and hardware today is not an easy task.

CEOCFO: ***How far will the current funding take you?***
Mr. Babin: We just closed a $4.5 round of Seed funding (funding now totals $10 million in funds and in-kind contributions) and the next financing round will most likely happen in about a year from now. Next year and the following year, we will need additional funding to support going into full production in 2019 and beyond.

CEOCFO: ***Is this an area of interest for the investment community? Do investors understand the AEPONYX story?***
Mr. Babin: I believe they do now. We took a non-typical approach to financing. Initially, when we started talking about hardware and optics and long-term development, investors were usually looking to apps and software and short-term returns. It was not an easy task! But, we did have a strong green story to tell as well; as a result, we obtained a $1.9 million grant from Sustainable Development Technology Canada to help fund research and development. Then suddenly, we got investors' attention and they said: "You know what? That is interesting! Optical switching is coming and next-gen telecom is the future!" It was a lot of work to convince investors, one after the other, about the potential of the technology.

It helped that some of our customers came up and spoke to our investors and explained the value of it. It has been a lot of effort, but today they do understand. That is because right now people are more sensitive to the importance of the clean-tech sector, of course, but also there is also a new positive trend for companies in the optical and photonics space. Three years ago, it was more difficult, but now these business sectors are now generating more hype among investors as they start seeing some investments and mergers and acquisitions and we are benefiting from it. In addition, being a Canadian company is also a great advantage, and the VC (Venture Capital) ecosystem is very dynamic here. And the collaboration between the government and the traditional VC is taking different forms than in some of the other countries. Plus, we have now proved our technology in partnership with credible clients and we've built a great team. All of these factors are lining up very well so, right now, the path to the A round is much easier. It is going to be an interesting next year and a half.

CEOCFO: ***What should people remember about AEPONYX Inc?***
Mr. Babin: We will soon be one of the reasons you can better stream films to your home, manage vast amounts of data in your business, and can ensure the quality and speed you expect on your mobile devices. While we have a lot of work to do, we will be one of the reasons universal access over fiber becomes a reality. Keep an eye on AEPONYX.