Chip Veteran Backs Ambitious, Economical Startup

By Don Clark
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Gordon Campbell, an entrepreneur who has been betting on new chip companies since the 1980s, is now backing one of his most ambitious startups yet. But very little money is involved.

He is co-founder and chief executive of Cornami Inc., a small startup that on Tuesday announced a $3 million Series B funding round led by Impact Venture Capital. The company, previously called Sviral Inc., is also announcing senior management additions to Cornami and providing some of the first details about its strategy.

Cornami's strategy includes designing chips that could have 1,000s of simple calculating engines, compared with one to 24 complex processor cores on the general-purpose microprocessors sold by Intel Corp. Potentially more important, Cornami executives say, is a novel programming approach to break up computing jobs to be handled by all those electronic brains.

The chip startup plans to market the hardware and software to companies involved in applications involving analysis of large amounts of data, such as artificial intelligence, robotics, autonomous driving and financial trading.

"This is a change-the-world kind of company," Mr. Campbell said.

He will face industry skepticism. That's because parallel programming has long been regarded as one of the toughest problems in computing.

Most microprocessors execute instructions one at a time. Some others chips, like Nvidia Corp. 's graphics processing units, can carry out hundreds or thousands of the same simple calculation at once; a typical example is simultaneously applying colors to the many pixels on a computer display. But more complex chores involving different kinds of calculations--and data exchanges between cores--are extremely hard to coordinate.

Chip design, meanwhile, has scared off many venture capitalists because of rising costs with the vast number of transistors on today's chips. International Business Strategies, a Silicon Valley consultancy, puts the cost of designing a typical chip using a mainstream manufacturing process at $70.1 million.

Yet Cornami, with about 20 employees, expects to announce its first chips later this year despite raising just $4.8 million including the latest infusion. It expects to package those chips in small computers aimed at data centers.

Mr. Campbell, a former Intel manager best known for leading the 1980s-era chip companies Seeq Technology Inc. and Chips & Technologies Inc., said Cornami can do things more efficiently because of market changes and differences in its technology. For one thing, since it uses identical, cookie-cutter processors that are replicated on each chip, the design cost is considerably lower than with other products.

Cornami is also building on technology that was first developed at earlier startups backed by Mr. Campbell, as well as relying on external cloud services to handle its computing needs. "This is

the first time that every aspect of the design is being done in the cloud," Mr. Campbell said. "We have no lab and no hardware."

The company's programming approach, called TruStream, is largely credited to co-founder and Chief Scientist Fred Furtek, who has long worked on technology associated with multi-core processors. Cornami's chief technology officer is Paul Master, another co-founder.

Mr. Master said Cornami has developed ways for programmers to have simple tasks executed simultaneously without having to explicitly coordinate them, partly by using additions to existing programming languages like C. The approach, based on concepts that are sometimes associated with the term "stream computing," is more practical now that many kinds of calculating chores have emerged that can be carried out independently, said Richard Wirt, a former Intel executive who has been advising Cornami.

"I think it can be a big deal," Mr. Wirt said.

But some others who have worked in the field question whether potential customers will take a chance on modifying their software to exploit even promising innovations from a small startup. "If you have to change the code by even a line, that is not acceptable to a lot of software customers," said Andreas Olofsson, chief executive of Adapteva Inc., a Lexington, Mass., startup that has been working on its own parallel processors since 2008.