How collaboration can work

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IN BRAZIL REGULATORY advances to unlock the relationship of businesses and research universities in pursuit of technological innovation move slowly; in the US some initiatives are accelerating the pace of productivity gains. The 28 companies that are currently members of the Commonwealth Center for Advanced Manufacturing (CCAM) are encouraged to share projects of mutual interest, and they can also count on the support of scientists from more than one research university, all in the State of Virginia, where CCAM is located. Joseph Moody, CEO of the CCAM, said that for each project the center chooses not to select companies that directly compete with each other. “This way we can create a collaborative space, where companies are complementary in terms of capabilities and the business challenges they face,” he says.

Among the companies participating in the CCAM are NASA, Canon, Rolls-Royce, Alcoa, Airbus, and Siemens. Since the CCAM was created in 2008, Siemens has partnered in 11 research projects, of which 5 are classified. “Among the shared projects one is part of the software used by Local Motors company in 3D printing of cars,” says Helmut Ludwig, executive vice-president of Siemens US and chairman of the CCAM board. Moody points out that the risks and costs of the projects are divided between the companies, but “there are companies that not only fund but also control projects.” Currently, the CCAM has advanced equipment for applications such as additive manufacturing, which allows printing of an object from a digital model generated by customized software. It also has a 3D visualization lab used to virtually reproduce the operation of a machine to help design and manufacture parts. This can prevent faulty designs and save money.

In the case of Rolls-Royce Crosspointe, a UK
company with operations in Virginia, CCAM technological support started with design of the US plant, which opened in 2011. Since 2014, the company has been manufacturing parts for aircraft engines there, some designed to withstand very high temperatures in the combustion system. The plant is highly automated so that each employee can operate up to three machines simultaneously. “Depending on demand, which decides the number of shifts required, an operator can program the machine on Friday to complete a cycle of activities during the weekend,” explains Lorin Sodell, company executive. “Ten years ago, such a process would take twice as long and would require at least twice as many workers.”

**Without borders**

In the case of car maker Local Motors, collaborative technology is not limited to software supplied by Siemens. The company, which has 116 employees and created in 2007 in Phoenix, has an online community of 52,000 designers, engineers, and consumers around the world, who apply through the company website. “These are people with a real interest in following the development of our projects. We have, for example, adopted a design suggested by a South Korean student, who gets royalties from the product,” explains Justin Fishkin, Local Motors chief strategy officer.

Local Motors has on its resume creation of the first car printed in 3D, presented in 2014 at the International Manufacturing Technology Show in Chicago. The car body is printed in carbon fiber-reinforced thermoplastic, and it takes about 48 hours to print one prototype. The completed car has 50 components. The company expects to receive authorization to market the vehicle in the US in the next 18 months, in the category of low-speed electric cars. It will cost from US$12,000 up, depending on the configuration the customer chooses.

In the showroom, which will be officially opened in June in the State of Maryland, outside Washington DC, the 3D printer and car will share space with a classroom, where Local Motors hopes to attract students to stimulate interest in science, technology, engineering, and mathematics. “We seek to encourage interest in science and technology even in young children; this is part of the essence of our business,” explains David Woessner, general manager of Local Motors in Detroit and Washington DC.

*Solange Monteiro traveled to Washington DC at the invitation of Siemens.*