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Innovation spurs the economy

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Walk into most startup spaces and you'll see young tech entrepreneurs typing away at laptops,

developing apps and web-based technologies. Hunched over their keyboards wearing noise-cancelling headphones, the typical sounds you hear are tapping keys.

But here in Somerville, our entrepreneurs are building prototypes of physical products that are solving our biggest energy and environmental challenges. They use power tools, make noise, and let sparks fly as they make their prototypes, giving our space a much different sound. When not in the lab, they use the abutting co-working space, also banging on keyboards and using multiple screens to design these prototypes using the latest software modeling tools.

One company has developed a device to capture and reuse methane gas from landfills for energy. Another is creating quick-deploying, high-altitude airborne wind turbines to provide energy to remote and disaster locations. Another makes it possible to charge wireless phones at outdoor venues with solar power. There is even one helping people grow food in their homes.

All have the same goal: raise the money to build their companies, which means actually manufacturing and assembling products, then shipping those to early customers.

As I look around our open workspace, I wonder how we keep these innovative young entrepreneurs and their companies in Massachusetts. Actually most would prefer to make their products here if they could, putting off the inefficiencies and communication issues involved in manufacturing abroad as long as possible. But it has to make financial sense.

But does Massachusetts have the manufacturing and supply chain infrastructure to meet their needs? How do we connect our entrepreneurs with those companies? And even if we do, how do they build long-term relationships that pay off for everyone?

The dirty, greasy, grimy factories of the past that fill most people's imagination are a far cry from the innovative, advanced manufacturing that's actually going on in the commonwealth today.

I've walked plant floors of Massachusetts manufacturers and marveled at their order and cleanliness. The machinery is often compact, enclosed, and run by people interfacing with computers. The production runs are often small, iterative, and are much more easily done by 3D printing techniques today, with less waste of materials, time and cost.

So how do we connect our entrepreneurs with these manufacturers? And how do they build high-value, long-term relationships?

According Manufacturers News, 8,166 Massachusetts manufacturers employ 372,043 people. We could employ more, but a number of factors stand in our way, none more important than finding and connecting manufacturers with new customers. They don't always know how to identify and leverage new markets like clean technology, and they're unsure of how to adapt or be part of the innovation economy.

Our innovation economy sector, clean energy, grew for the fourth straight year in 2014, amounting to 47% total growth since 2010, according to the Massachusetts Clean Energy Center's 2014 Jobs Report. This puts Massachusetts on track to hit 100,000 jobs in clean technology in early 2015, with many of those companies focusing on building physical products.

We must find a way to connect manufacturers with these startups and keep those jobs growing here. That includes inventors, PhDs, designers, equipment operators, assemblers and shippers who help develop the products, right on through to the people needed to operate equipment, do assembly, and ship. It benefits Massachusetts at every level.

So how do we connect Massachusetts clean-technology innovators and Massachusetts manufacturers? First, there needs to be more education about existing need and the resources available to both startups and manufacturers. By teaming up early in a startup's development, an established manufacturer can contribute to the innovating and problem solving as a startup moves toward commercialization, which can lead to better products and smoother processes. This is a two-way process and benefit as the manufacturer is exposed to new technology and the opportunity of emerging markets, such as clean technology.

Second, adaptability on both sides is important; the more startups and manufacturers understand the others' needs and processes to work together, the more they'll learn about

how they can help one another to make those synergies possible, and make better products in the end.

These are just the first steps to closing a gap that will benefit both hardware startups and manufacturers, creating jobs in the commonwealth. We are working on exactly these issues with grant funding from the Advanced Manufacturing Futures Fund. Our goal is to create and model successful partnerships for clean technology and other hardware startups across the innovation economy with Massachusetts-based manufacturers.

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