

Haddington Dynamics is the creator of *Dexter*, a high-precision, high-performance 3D-printed haptic robot powered by an FPGA supercomputer. We are positioning Dexter as the first personal robot. It gives arms and legs to the Internet of Things (IoT). Dexter has a 670mm reach, 1kg payload and 50µm repeatability.

Investors Back Haddington Vision

Successful seed round puts HD on a sound trajectory.

In February we launched a seed round to coincide with the launch of e1electron, our joint venture with Axiom Electronics. We had talked to local groups along with friends and family. We had several investors lined up to invest in HD. We met with two key investors in the Pasadena area that believed in our vision on where our technology can go and wanted the full allotment of what we were offering.

They will be bringing their experience with investment and operations to the table, as well as their own strategic plans. A new company will be formed, with ownership shared equally between the investors and HD, to target agriculture. The new company will seed strategic alliances to license HD technology into this growing field.

Yuji Ueno brings his multi-national experience helping Fortune 500 companies with turnaround efforts, outsourcing/SLA negotiations, as well as the Global Automotive Marketing Director during his years with Ernst & Young and PricewaterhouseCoopers. He helped construct the prospectus/financial model and served as the main speaker and main contact for investor relationships for a major PRC company during their Global IPO efforts in the Hong Kong Stock Exchange. IPO was a huge success resulting in over subscription as well as 40%+ above IPO pricing. His most recent endeavor is a partnership with Tokyo's 3rd largest restaurateur that resulted in the rollout of 7 locations throughout Southern California in the span of 5 years.

Bret Enerson is Partner and Managing Director of Casperson Investments LLC. His IT and management background has served him in building accomplished teams of professionals experienced in identifying and developing properties, products and businesses based on realistic values for his investment affiliates, as well as joint venture partners. These activities take place throughout the Midwest and California with a focus on partnerships positioned to take advantage of unique opportunities in emerging markets.

They bring talent and backgrounds that will allow HD to grow. They will be running the new company (name in progress) as well as provide bandwidth to HD.

HD will also be exhibiting at the [Automatica – Munich](#) show in Germany on June 19-22 and will be exhibiting our latest invention - The Micro Maker. This 5 Dexter cell will revolutionize what can be assembled at the micro level. Automatica has over 40,000 attendees and is focused on robots and automation. Stay tuned for new details as we approach the show.

Wiring webinars are now available on our [site](#) or at our [Youtube channel](#)



HD will be exhibiting at the Bay Area Maker Faire (BAMF) on May 18-20, 2018



We will be exhibiting at the automatica trade conference and unveiling our latest invention.

[Onshape](#) has all the CAD files
[GitHub](#) has all the source code
[Thingiverse](#) has all the STL files

There are links to all of these and the community contributed open source material at <http://hdrobotic.com/open-source/>



APEX 2018: EMS Industry Meets Dexter

Recap of e1ectr0n launch.

The Haddington Team joined the crew from Axiom Electronics to exhibit together under the e1ectr0n™ Inc banner at the end of February. Fry, James Wigglesworth, Kent Gilson and Todd Enerson showed up just as the booth got its final touches. We were like blisters – we showed up after the work is done. Robert Toppel and Michael Brinkley did a great job with the booth. Team Dexter got to work getting the new robots, called pr0t0n™, up and ready for their big debut.

Pr0t0n is e1ectr0n's version of Dexter that has some redesigns for manufacturing, new parts made from the Markforged Mark 2 printer with embedded carbon fiber, special end-effectors for paste extrusion and a custom design software package.

[APEX](#) is the largest trade show focused on the electronic manufacturing industry. Many big names with big booths were there. A total of 479 exhibitors and 9,169 attendees from 43 countries packed the San Diego Convention Center.

e1ectr0n™ demonstrated their paste extrusion demo for the pr0t0n™ and had two extra robots that we ran as a master/repeater scenario. Both demos had cameras on the end-effectors. The paste extruder showed video of where it would lay down paste on the circuit board. We used the other two robots to show the scaled down movement of the repeater bot and hover it over a board to demonstrate the ability of pr0t0n™ to assist and assemble in fine pitch soldering applications. This produced consistent traffic at the booth as we let folks move the robots around. The usual scenario - engineer sees the bots, plays with the bots, brings back boss (repeat) - brings back the C-Suite. This led to some high-level conversations with some large players in this industry.

Adrianna Denslinger and Carmen Watson also worked the show and did a masterful job not only bringing folks into the booth but demonstrating and explaining pr0t0n's capabilities.

Both teams got to know each other better and it was a great success both for the companies involved but also for the personal relationships developed over the course of the show.

e1ectr0n

A joint venture between Axiom Electronics and Haddington Dynamics focused on collaborative robotic solutions for High-Mix, Low-volume manufacturing.



Team e1ectr0n



Final hours of the show, pr0t0n still brought in booth traffic.



Brought out the Oculus and played with robots. This was a fun demo

Team Dexter gains a new member

James Newton officially joins Haddington Dynamics

James Newton works with embedded controllers, motor/servo drivers and IOT backend systems. He has long been involved in outreach for the technical community and is a leader with the San Diego Makers Guild and local Maker Faires, focusing on hands on educational events.

James has been helping and working with HD for over a year. We met James at the San Diego Robotics Club back in 2015. After the Kickstarter launch we contacted James, who had won a Dexter at the meeting, and asked if he would participate in the Makecation. James was instrumental to the development of the assembly manual. James continued to help HD with his insights and his work in Open Source projects.

James started out lending his time in our weekly software meetings and guiding us through the ins and outs of GitHub. James' role is truly full stack – working on both hardware and software with the current assignment of Arduino integration in the new gripper we have designed.

First

Sean Courtney was the first to complete his Kickstarter Dexter Kit

Sean is a Kickstarter backer and you can see his images of his Dexter (right) and a link to more photos is [here](#). Sean reached out to us when he was done with his robot and we walked through connecting Dexter to his computer. We are thrilled with his added parts. Clever ideas from his wiring harness will be incorporated to the Dexter design. He has added some designs for the Opto board coverings. You can see his stl files [here](#).

When his Dexter was calibrated I (Todd Enerson) asked him if he could answer a few questions, so we can feature him in a newsletter highlighting his great work. his emailed responses are below.

Why did he back us? Sean responded, *"I was attracted to the Dexter project because of its open source nature, high-precision, versatility, and low cost. I also really liked the attitude and mission of Haddington Dynamics. Creating an open source community geared towards enabling people to create personal micro-factories is a worthy cause in my book! My original intent was to use my robotic arm to help automate creation of wire harness assemblies, but along the way I've realized that 3D printing with Dexter would not be many extra steps beyond what is required for assembling harnesses. So, I will likely pursue this use of the Dexter as well."*

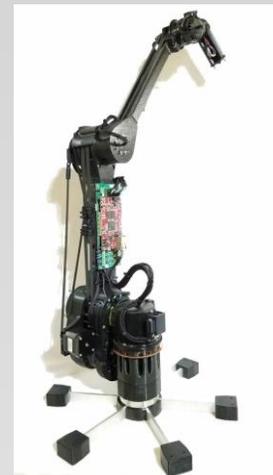
I asked about where he lived and what he does for a living. He shared *"I'm a test engineer for a flight simulator manufacturer in the Midwest. I've done electrical and mechanical assembly, test, repair, hardware/ software troubleshooting and verification of simulated aircraft systems. I have some experience coding in C, C++ and Java in a Linux environment. I've also coded at the Assembly and Binary levels and have done a few small projects coding FPGAs. I'm thinking this will be useful for the next phase of my Dexter."*

How was the build? Sean replied, *"My background came in handy when building my Dexter kit. There were certainly some challenges while building the kit. Thankfully, I had the help of my friends Caleb Callaby, Anthony Drake, and Matt Vlazny. We spent many nights in Caleb's garage working on this project."*

Sean will be taking a break from Dexter as his next project is building a house. Sean is a truly amazing maker and we look forward to hearing about and getting photos of his next big maker project.



James Newton joins Team Dexter



Sean's Dexter



Sean's new power and ethernet connection on Dexter



Sean repositioned the opto boards