Networking and Learning through Entrepreneurship, Design & Innovation

MacKintok, Inc. and SALT Makerspace recently collaborated with Indiana University in a pilot course called Design Entrepreneurship Workshop. The workshop was held on Saturday, April 3rd and was the last of three workshops involving Indiana University Undergraduate and Graduate Design students and Companies of various levels and expertise. The workshops intent were to address the natural affinity between design and entrepreneurship. The workshops explored how design and entrepreneurial perspectives can be mutually beneficial and showed how a potent combination can spark unforeseen potential. "Design Entrepreneurship" leverages interdisciplinary collaboration to develop innovative ways new ideas can be tested and brought to the public.

In each of the three workshops the students had a new "design entrepreneurship" challenge in which they created test prototypes. A typical challenge created a new prototype such as redesigning a critical piece of a medical crisis kit for remote and resource constrained areas. The actual challenges were developed at the start of each workshop. The class used emerging, virtual network of manufacturing resources, innovation communities and makerspaces to have their prototypes 3D printed. Students then submitted a final project summary and summary of the new technologies used to create their prototypes.

The workshop with MacKintok and SALT Makerspace began with Indiana University Assistant Professor Kevin Lair introducing Ken Tock from MacKintok and Mike Giannattasio of SALT Makerspace to the students via Skype. Prior to the Workshop the class provided SALT Makerspace with 3D Models of their projects which were then printed on a Dimension 3D Printer. For each printing routine MacKintok extracted and parsed relevant process information. During the actual workshop Giannattasio and Tock described the challenges of working remotely and how the class relates to manufacturing issues. Giannattasio provided an informative overview to the 3D printing operation and discussed its real world applications. Via Skype, Giannattasio was able to demonstrate prepping the 3D Printer and show a printing routine in action.

Tock covered the importance of process data collection, the challenges of funding a startup business going from where the business is now to where the business wants to be and how persistent and adaptive business leaders must be in pursuing leads in order to be successful. Tock then introduced the students to MTConnect, which is an open source standard that translates the information obtained from a given machine tool or piece of manufacturing equipment into a common language. This common language is XML and is based on Internet standards and makes it very easy for software companies to write software applications that can easily monitor the shop floor and perform many other types of analyses.

With the success of the pilot course, MacKintok and SALT Makerspace are hoping to continue the collaboration with Indiana University and expand on the effort. Future workshops look to improve on the optimization of the 3D models and printing times and techniques in order save time and reduce printing costs. In terms of data collection the data was extracted from the 3D printer as basic unformatted data

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and imported into a spreadsheet. This was done after the printing was completed and exported onto a USB drive and later parsed and formatted. With the next effort MacKintok is looking to collect data utilizing standard protocols such as MTConnect and proxy servers to format the data and deliver to the students in near real time. By doing so teaching the students the importance and benefits of adopting standards into their process.