The University of Minnesota’s Carlson School of Management and its Medical Industry Leadership Institute (MILI) are recognized leaders in business education and research. MILI offers students innovative training, knowledge, and experience through industry-specific courses and unique hands-on learning. In 2008, MILI started the Medical Industry Valuation Laboratory, which has grown to be the signature course from the perspectives of business partners, inventors, and students.

The Medical Valuation Lab conducts rapid market assessments for new medical innovations. The students in the course produce over 30 analyses per year, helping assess lifesaving ideas and streamlining the time-to-market for critical new products. Since 2008, more than 500 innovations have come through the lab. The Valuation Lab has a wide audience, ranging from students in eight different colleges at the University of Minnesota who want to gain hands-on, real-world experience, to clients and inventors who want a top-to-bottom analysis of their medical technology and its prospects in the market, to recruiters looking for future employees.

The Carlson School promises three things to its community of students, business partners, and colleagues. The Valuation Lab fulfills each of those three pledges:

1. We will create a transformative learning experience for every student.
2. We will develop influential knowledge that impacts the future of organizations.
3. We will grow entrepreneurial leaders with the imagination, integrity, and global mindset required to tackle the grand challenges facing business and society.

The Valuation Lab connects industry innovators with faculty and graduate students from across the University of Minnesota. Students from colleges including the Carlson School, the College of Liberal Arts, the College of Science and Engineering, the Law School, and the Academic Health Center work on interdisciplinary teams to tease out the intricacies of each innovation. By working together on these cross-functional teams, students from different programs and backgrounds help each other fill gaps in experience. Don’t know much about intellectual property? No problem, a law student can give you a brief lesson. Wondering what the pancreas does? Ask your medical student colleague. Will trying to build this invention defy the laws of physics? The engineer in the class can tell you. Not sure how to write up your report? Technical writers from the College of...
Liberal Arts can assist. Never completed a market assessment? Ask your MBA teammate. Each team member not only has important skills and knowledge to share—they are able to learn just as much from their classmates.

The course starts out with a mandatory full-day bootcamp where students learn about the required processes needed for each project (see Figure 1), how to conduct pertinent research, and learn perspectives from the best and brightest experts in regulatory, legal, and medical technology fields. Students are assigned the first of three projects at the end of the day and then hit the ground running. For the next three weeks, teams and instructors spend class time discussing assumptions, validations, and verifications in order to form final recommendations. In week four, students conduct a mock presentation that is critiqued by instructors and classmates, and in week five they give final presentation to inventors. That same evening, the students receive their next project and start the process over again.

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**Figure 1**

**Valuation Process**

- Client submits project for valuation
- Multi-disciplinary project teams formed
- Five-week turnaround time for complete valuation
- White paper and presentation delivered to client
- Feedback from technology developer

**Valuation Components**

- Technology ✓
- Market Size/Potential ✓
- Competition ✓
- Intellectual Property ✓
- Regulatory Analysis ✓
- Technical Evaluation ✓
- User Evaluation ✓
- Finance/Reimbursement ✓
- Recommendation ✓
In addition to the critical thinking and experiential learning skills, students gain very important talents: working in cross functional teams, cold calling to collect business intelligence and breaking bad news to inventors. Each semester, lead instructor Mike Finch tells his students, "Be careful not to drink the Kool-Aid. These inventions are their babies. One of the hardest things to do is tell someone their baby is ugly."

CLIENTS & INVENTORS
The ultimate goal of innovation is commercialization. Often when inventors innovate without fully exploring the need for their invention or haven’t developed a commercial target, the technology can end up on the cutting-room floor.

“Many researchers and inventors are technically very good, but don’t understand the nontechnical challenges and requirements for a new technology to become commercially successful and therefore fundable. The MILI Valuation Lab helps the entrepreneurs understand the potential for success and, more likely, the challenges that will need to be addressed. The best entrepreneurs have taken this information from the Lab, solved the challenges, and returned to the Lab for another valuation that is inevitably more promising.”

Randy Nelson, CEO & Founder, Evergreen Medical Technologies & Former Instructor, MILI Valuation Lab.

Innovations that have the benefit of a full and thorough evaluation can often be pushed into the market more quickly. The rapid turnaround and no-cost option of the Valuation Lab where students apply the “business” aspect to these inventions, speeds up the innovation pipeline. By doing so, potentially disruptive advancements can get to market more quickly and have positive impacts on patient care. The types of projects seen are varied, from cardiac to orthopedics and gastrointestinal to oncology. This further illustrates the potential to change many markets and standards of practice.

Even if an inventor has thought about markets and patents, they often don’t know how to dig in and find the answers. Not every biomedical engineer is familiar with conducting a full market analysis or finding out the voice of the customer. The lab plays an important role in helping them with these complex components. When the student teams give their presentations, they take the viewpoint of a potential investor. By doing so, they are better able to help the inventor understand where some of the roadblocks exist. Is there a saturated market? Will anyone reimburse for this? Is this cure for cancer too expensive for anyone to buy? Students bring the “business” to the table providing inventors with a pathway on how to turn their idea into a marketable product.
Presentations end with very straightforward summary statements containing recommendations for next steps, which there are typically three: 1) proceed; 2) interesting but not ready for prime time; 3) stop development, there is no commercial potential.

RECRUITERS

Alumni of the Valuation Lab are highly sought after as they enter the workforce. They receive hands-on, real-world training that is unique to the MILI program, allowing them to develop critical thinking skills. These students are able to hit the ground running as they enter positions at leading medical industry firms.

Because of this class, students are able to impress potential employers with knowledge gained from having worked with different innovations and a deep understanding of what is involved in taking a product to market. It also helps them with their professional networks - they not only meet with the inventor but also work with physicians, engineers, and others in the healthcare space as they conduct their research. Students gain a real edge when recruiters know that they have these skills, networks, in addition to having completed complex lab projects.

Employers have commented that alumni of the Lab come into their companies and are often two or three years ahead of where they expect new employees to be in their knowledge of the market and tangible skills. The experience in the Lab not only helps students land jobs but gives them smooth transitions once they start their careers. This has led to high placement in the healthcare industry, with that sector being the top employment category for our full-time MBAs at an average of over 20 percent each year.

SUMMARY

The Lab has helped organizations and individual inventors throughout Minnesota, across the nation, and around the globe. Students have seen projects from:

- Hospitals and clinics
- Medical device manufacturers
- Fortune 500 companies
- Healthcare startups
- Nonprofit organizations
The Lab has even gone international. Faculty at the Stockholm School of Entrepreneurship and the Karolinska Institute in Sweden took notice of what the Valuation Lab was doing. Now, the Carlson School has formed a partnership with the schools, creating a two-week global lab in Sweden. During the two weeks, Carlson School students have the unique opportunity to work on cross-cultural teams with students at these schools and evaluate an innovation in a truly global context. They not only work on projects they have the opportunity to visit with local experts and companies. This model has been duplicated in Shanghai as well as in Palo Alto California, in the heart of Silicon Valley, a hub for medical device innovation.

The goals of the Lab are to help inventors accelerate the innovation pipeline, prepare students for leadership roles in the medical device industry, and drive economic development. The value of the Lab to students, inventors, and recruiters is immense; the benefits to the medical industry and society at large are even greater. Every five weeks an inventor gets a recommendation, supported by facts and figures, that helps them make an informed decision to go forward with that project or move on to something new. It is very possible that a new lifesaving got its beginning in the Valuation Lab.

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