IP rights, NDAs can cloud capstones and other student-focused programs

Fine-tune policies to better support student-industry collaborations

What are the recognized best practices among university industry engagement offices when it comes to student-industry collaborations? How are contracting agreements structured? How are fees charged? How is IP handled?

The most accurate answer is “it depends.” It depends on whether the project is a capstone, or whether the student is participating in industry-sponsored research. It depends on whether undergraduate or graduate students are involved. And, of course, it depends on individual university policies.

“For us, it’s mostly a couple of different buckets,” shares Evan A. Facher, PhD, MBA, director of the Innovation Institute and vice chancellor for innovation and entrepreneurship at the University of Pittsburgh. “One is the more traditional capstone, the other occurs in the regular course of industry sponsored research where students would be involved. We treat both very differently.”

“We have undergraduate and graduate capstones,” adds Caroline G. Wood, executive director of corporate relations at the Georgia Institute of Technology. “We also have a research semester, as well as graduate work on industry projects.”

Beyond that, notes Kevin continued on page 50

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53 Streamlining process supports growth of capstone effort
About two years ago, Jason King, associate director of corporate relations at the UC Irvine Donald Bren School of Information & Computer Sciences, was presented with a challenge. “My Dean asked me to help streamline our eight (six at the time) different capstone programs.”

55 Rutgers alumni initiative brings engagement programs to the workplace
A growing number of universities are including a strong focus on alumni involvement as a key part of their overall corporate engagement efforts. But at Rutgers University, the initiative known as the Rutgers Alumni Workplace Engagement (AWE) has shifted the focus away from making things happen on campus to engendering new programming at the workplace of the industry partner.

57 Even experienced faculty vulnerable to potential pitfalls during engagement
Common wisdom might hold that veteran faculty innovators are better prepared to interact with industry partners and are therefore less likely to commit some of the most common errors to which their less experienced colleagues are prone. But some of them may actually be more likely to commit “unforced errors.”

59 Prestige, size, and location no longer restrict university-industry collaboration
Neither the prestige, size, or location of a university or a company are prohibitive any longer for university-industry collaborations. In our annual 2021 survey of the industry engagement and R&D communities, we found that these factors are considered by only a minority of teams when starting new partnerships.

62 Oakland U makes potential industry partners ‘an offer they couldn’t refuse’
Convincing a roster of collaborators including General Motors, Siemens, MAHLE Industries, ABB Inc., AM General, Continental, Hirotec America, KUKA Robotics, Magna International, Rave Computer and the U.S. Military Ground Vehicle Systems to become founding industry partners to fund an ambitious Augmented Reality Center (ARC) may seem like a tall mountain to climb, but Khalid Mirza, PhD, ARC Founding Director, puts it in the simplest of terms: “We made them an offer they couldn’t refuse -- by presenting a business case,” he asserts.
**Policies continued from p. 49**

Wozniak, MBA, RTTP, head of the Office of Corporate & International Contracting/Exchange Agreements at Georgia Tech, there are further distinctions based on the industry partner’s involvement. There may be a project for which the company simply provides advisors (someone to answer questions, offer guidance on the specifics of the projects), or a slightly larger contribution by the company in which it may provide funding. Each of these variations, he notes, are reflected in the policies regarding some of the aforementioned issues.

Peter K. Dorhout, PhD, vice president for research and professor of chemistry at Iowa State University, says policies governing student-industry work need to consider all the variables. For example, he says, “undergraduate and graduate students are different.”

**Addressing the differences**

As Dorhout only recently began his position at Iowa State, most of his comments reflect policies he developed and/or oversaw at Kansas State University, including the difference between undergraduate and graduate students. “In essence, an undergraduate can develop and own things themselves,” he states. “You can have students as co-authors on a patent, so they can own the IP through a patent, just like faculty or staff members based on their contribution to the work. But it comes down to how much of a project was performed by student activity.”

“On capstones, when we pair up a company with students it runs basically through the school itself,” says Facher. “Students are treated independently from the university. If they develop IP worthiness or need to do confidentiality agreements, they are treated as an individual and interact with the company separately. We try to provide guidance where we can, but it’s not necessarily a university technology. In educational activities, the students own the IP.”

However, he continues, when students are working on a research project, they are treated like faculty and staff. “In that case they typically get paid as a university employee who works in the lab,” he explains. “They get a salary, and anything from that funding is owned by the university, [as] that research is done in our lab setting.” Regular industry-sponsored research, Facher continues, “falls under our IP policy covering technology invented by a university member engaged with sponsored research. But,” he emphasizes, “capstone is a completely different approach. At times it's more complicated because when you have the students act on their own in that regard, it’s almost as if they're individual, owned entities. We try to provide counsel to them and the faculty member whose class or program it is -- that may be about what they need to be careful around, what can be promised or not, and so on. We help the faculty member, getting alignment with the company as to what their expectations are to come out of the project so there are no surprises for the student. We feel we have to be part of that third party connection so that there is an alternative [project] available if the student does not want to sign confidentiality agreements, and so forth.”

At Georgia Tech, adds Wozniak, industry contribution is an important differential when it comes to capstone projects. Where there is no financial contribution at all, he says, “there are absolutely no rights the company gets. It is a student course, it’s meant to be, and that’s all it’s going to be. The company should have no expectations, other than these are great opportunities to get to know the students and hopefully identify potential employees.”

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A second scenario involves funding or other resources from the company through which the capstone is supported -- in general, or in a specific project the company is involved with directly. In that instance, there are two possibilities. If it is a straight-up donation, then like any other donation there should be no strings attached to it, and it mirrors the first example. However, if the company is providing financial support for the project, and if they have an interest in obtaining rights to innovations coming out of the project, it is then treated as a sponsored research activity. “Usually, the student is not paid under that scenario, but we do have to get assignment documents from those students, explaining they are treated as inventors under our IP policy, as in any other sponsored research activity,” he explains.

Wozniak says his team has worked with most coordinators and chairs on this issue to make sure they understand the policy. “We wanted to make sure it was understood by coordinators that they needed to ensure the students have alternative projects to work on,” he explains. “We do not want to be seen as forcing students to work on sponsored research activities.”

Confidentiality issues

One of the biggest problems with capstones, says Wozniak, is the desire of companies to bind students with confidentiality and then over-reach in NDAs. “I’ve seen everything from non-competes trying to be snuck in, to confidentiality clauses where students are unable to present project results in the classroom,” he shares.

Usually, says Wozniak, this is due to mis-alignment of expectations. “We have sometimes walked away,” he admits, “but we typically try to work with the company to help explain the purpose behind the capstone projects -- to the point where we actually created open letters to the companies. Some companies walk away from that.”

In terms of specific IP policies, Wozniak explains that in the first two scenarios, as part of university IP policy the students retain rights to the IP. This is not, he adds, a policy followed by all universities.

“We have had a joint program with Emory, and they are very different,” he notes. “They want to review any IP from projects in which their faculty were advisors, because they may have contributed,” he notes. “We take the stand that capstone advisors should not be creating IP, because you’re doing it for the students.”

Another “cautionary tale” Wozniak shared involves faculty who have their own start-ups that have sponsored capstone projects and also serve as advisors. “We’ve deemed it as a manageable conflict [under university COI policy], but there has to be a clear separation from sponsoring the project and advising the students,” he says.

As for graduate students, “it depends at what level you’re talking,” says Wozniak. “Most policies are the same if it’s a master’s level capstone design course. They must not be employees of the university for the purpose of participating in research. But, if the program is not exactly capstone, they end up owning their own IP, unless they have sponsored research with the company.”

Fees -- and what they get you

Many universities charge industry partners fees associated with collaborative projects that include students. The University of Michigan, for example, requires a fee of $20,000 a year for projects in its Multidisciplinary Design Program (MDP) in the College of Engineering. Its leaders stress that these are not capstone projects.

“A traditional capstone in engineering has a model where, if you have a mentor, you see them two or three times a semester,” says Gail Hohner, director of the program. “We have weekly mentoring from a faculty member and an industry member. This gives you a lot of opportunities to unpack technical problems or other elements of the program. This morning, the industry sponsor took 15 minutes explaining what performance appraisals look like in a company, and what developmental feedback looks like for a student.”

The program has 22 projects this year, “and as many as 40 in a big year,” says Jenn Carlson, sponsored projects program manager. The projects, she notes, “are brought to us from the industrial side -- problems they want to have solved.”

The multidisciplinary student teams range from five to seven participants with majors, in addition to engineering, including liberal arts, physical chemistry, and math. In all, says Hohner, 88 separate majors have been represented in the 10-year-old program.
“We have a contract we sign with the company that lays out the fee,” Carlson adds. “It explains the minimal requirements from the sponsor side and from our side. They’re expected to mentor one hour a week, we agree students will provide a report at the end of the year, but we do not necessarily promise work product.”

The contract also lays out the IP policy; in most cases, the IP belongs to the company. As for the NDAs, “we facilitate; we do not enter into the agreements,” notes Carlson. “We provide a standard template we believe is appropriate for the engagement work we expect from students, and maybe 75% of those companies use them and sign with the students, occasionally with some small changes. Some do request more significant forms.”

“It’s a very simple IP NDA agreement, written in plain English, and appropriate for students,” adds Hohner. “Signing the IP agreement is a condition of participation, and students understand this.”

“We pride ourselves in keeping a robust program and trying to show the students lots of opportunities,” Hohner adds, “so we also often try to extend a couple of pro bono projects -- which we fund.”

At KSU, “the College of Engineering has an annual fee (in the $10,000 range) to participate in an industry leadership forum,” notes Dorhout. “In essence that gets you some branding with the university, and prime time for recruiting students.”

Companies that are part of this leadership council can come to campus, be given a couple of rooms, and set up and coordinate interviews.

“There are also prime spaces in recruiting fairs, and it gets you access to keystone projects with the students,” he adds. “These are very carefully selected projects students work on for capstones, [and] they do not expect any IP to come out of it. Because the company is donating, these resources went to some scholarships and other activities -- there would not be expectation of IP ownership. You can’t have that quid pro quo for a corporate donation.”

At Georgia Tech, “we charge $10,000 per project to a company to support a capstone,” Wood shares. “We want to make it as clean as possible in undergraduate programs.”

Policies continued from p. 51

Learning as you go

Policies guiding student projects have evolved over the years, notes Wozniak, and have changed considerably based on lessons learned. “We were awful at capstones for many, many years,” he admits. “We did not keep in mind that this is part of the educational process for students. We were in euphoria, almost a frenzy, on how to engage with companies and students creating all this IP we needed to suck up like a Hoover vacuum. I had to keep reminding people that this is about experiential learning for students, and we did not need to claim IP rights.”

About 10 years ago, he continues, the IP policy was made very specific. “We said if an undergraduate student is working on a research project that is internally funded, we will not claim any rights to that undergraduate student’s IP. Some students do supplemental work with participation in sponsored research. As soon as they do that, we require they assign the rights.” Once the attitude was “re-directed” and made into policy, he continues, “what an amazing change in attitude there was in capstone.”

“Those companies who understand how this works -- the benefits and the parameters -- come back and talk about what an impact the projects have had on the company,” Wood adds. “But we worked with one company that was hell bent determined to own the IP; they missed giving students a real opportunity to learn something. They would have benefitted by giving the students the opportunity to grow; everyone benefits. This is a really great tool when used appropriately.”

“As a company, you need to know up front what our policies are on IP,” adds Dorhout. “You choose: if it’s simply fee for service, you own everything. If it’s part of a project you want to do and students are working on it, fantastic.”

“I think the biggest lesson is that everyone needs to go into these with eyes wide open,” Facher asserts. “You want to be sure not to put the students in an uncomfortable position where there are certain requirements, internally or third-party. They’re here to get an education, not to create widgets for a third party. Be on the same page at the beginning of the project -- what the expectations are, what documents need to be signed, and what they mean -- and provide the students an out. That’s the single biggest learning piece.”

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Simple form brings big improvement
Streamlining process supports growth of capstone effort

About two years ago, Jason King, associate director of corporate relations at the UC Irvine Donald Bren School of Information & Computer Sciences, was presented with a challenge. “My Dean asked me to help streamline our eight (six at the time) different capstone programs,” he recalls. “Many of the programs were not interacting with each other; the directors had different ways of managing communications and logistics.” The Dean, he adds, was also looking for King to bring in more industry partners, mentors, and internships, among other goals for the school’s corporate relations activity.

The unique status of the Bren School made the task more challenging. “We are a stand-alone computer science school,” King explains. “Most capstone programs are found in departments within a school of engineering, but ours is similar to those at Carnegie Mellon and Georgia Tech; it’s a lot bigger, with 4,300 students, 105 faculty, and it has grown 300% in the last five years. We graduate 1,200 students a year, supplying roughly 2% of the total academic software engineering talent in North America. We have three departments -- computer science, informatics, and statistics -- and one of our main programs is the capstone,” which administers about 140 projects a year.

Form mitigates the silos

King knew one of his biggest challenges was to reduce the “silo-ing” that had been occurring in the programs. “The faculty tended to work more independently of one another,” he emphasizes. “They had all these different capstone projects, and in regard to best practices -- or even to making things easier or more intuitive -- there was not a focal point. The Dean wanted me to talk to all the different directors, understand where they needed help, and make things easier for them, their students, and our external partners.”

Adding to the challenge was that some faculty members were fine with the way things were running, while others were not sure how to make things better or more efficient. “Based on that feedback, I had to figure out what elements we could incorporate to make things easier,” King shares.

He came to the conclusion that he needed to create an intuitive visual aide, to be completed by potential industry partners for any projects, that would include the information needed to help set the stage for a successful partnership. (See a copy of the school’s project planning form on page 54).

In this one-page intuitive document, King explains, “you put in all the information on who you are, contact information, the type of project you want the students to work on, specific skill sets, when you want to get involved, and some specific resources you could offer or share.” The form, he continues, “creates a blueprint for any conversation” with potential industry partners. “If a company is interested in us, we can see what this project would look like, and we can now have a qualification meeting,” he explains.

Having this background information in one place, King continues, “was huge. There can be a lot of wasted time if they are not serious partners, so we can now put a lot of due diligence in up front.”

The efficiency gains, he says, have been tremendously helpful. “We work with 140 projects a year -- more than most universities,” King notes. “After we receive the form, we set a qualification meeting of roughly 30 minutes with the potential sponsor, where we set realistic expectations, set the tone, and make sure all sides feel comfortable about the set next steps.” Not having such a process, he asserts, is “a really big detriment.”

Gaining more partners

In terms of attracting more industry partners and engendering greater engagement, King says he basically sees himself as a business development director. “I don’t think it’s that complicated; it’s more like having a vision and goals, and implementing those goals,” he says. “I’m fortunate enough to work for a STEM school, and that’s the future for most employers. I basically ask what their specific company or project needs are that they just do not have the time or resources to address. If there is a need, I say ‘this group of students could do that for you.’”

Current recruitment needs, he continues, help the program maintain an upward momentum. “Over the next 10 years, according to U.S. Department of Labor statistics, there will be a shortage of over 150,000 jobs for software engineers,” he notes. “It’s already competitive enough for talent, and it’s getting worse. I tell them this is a great chance for them to vet out three to five students who will work for a quarter or two with them. By comparison, if you’re continued on page 54
trying to find a software engineer for your company, you could easily pay a recruiter $25,000 to $50,000 for their services. Most universities have monetary gifts that go back towards the capstone programs [that are much less than that]."

As for mentorship, King says, from the very start of a project he mentions that these students are looking for role models or mentors to help guide them along. In fact, he adds, the student team lead and the sponsor team lead help each other along the way. "We definitely mention, however, that there is more of a learning curve for the students in that they may not fully understand the company sponsored project or its resources," he adds.

How does he measure success? "There are a couple of different variables on the gauge," says King. "Number one is repeat sponsoring companies. How many sponsors are coming back? Any program that is doing well has that. Number two is having more external type projects than internal. "For us, [growth is] more obvious because our numbers were lower," he continues. "Also, we're getting a lot of capstone monetary gifts. It's all moving in a mutually beneficial direction for all sides."

One of the keys to success, he continues, has been top-down support -- from the Dean as well as department chairs. "Some of the faculty were supportive of the streamline approach, while others needed to be reassured of the value with partnering," he reports. "But it's really the added value -- what the streamline approach brings to the table -- that makes their jobs easier, and their programs better."

Still, he notes, if a faculty member is not interested, it's hard to convince them otherwise. "They hold a lot of the weight," he concedes, "so one of the biggest things to show them is how by partnering with me, it makes things easier for them."

Contact King at 949-824-3088 or jking5@uci.edu.

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**Figure 1**

<table>
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<tr>
<th>Challenges:</th>
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<tbody>
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<td>Resources:</td>
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<td>Logistics:</td>
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Preferred course (please see the available set of courses and when they are offered, do not worry if you do not know upfront, our corporate relations staff will help you find the best match to your project):

- Data Science 15 weeks, undergraduate, Winter & Spring
- Information 10 weeks, undergraduate, Fall
- Computer Science, 20 weeks, undergraduate, Winter & Spring
- Software Engineering & Informatics 20 weeks, undergraduate, Fall & Winter
- Software Engineering & Informatics 20 weeks, undergraduate, Winter & Spring
- Computer Science 10 weeks, Professional Master, Spring
- Data Science 10 weeks, Professional Master, Fall (starting 2021)
- Software Engineering 10 weeks, Professional Master, Fall (starting 2020)
- Human-Computer Interaction and Design 20 weeks, Professional Master, Spring & Summer

Preferred mode of interaction (for at least) weekly check-ins with the student team:

- In-person at my organization's premises
- In-person on campus
- Teleconference

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**Source:** Donald Bren School of Information and Computer Sciences
Rutgers alumni initiative brings engagement programs to the workplace

A growing number of universities are including a strong focus on alumni involvement as a key part of their overall corporate engagement efforts. In the majority of these programs, efforts have targeted collaborations with alumni employers to increase philanthropy, grow industry-sponsored research, and foster other partnerships benefitting university activities. But at Rutgers University, the initiative known as the Rutgers Alumni Workplace Engagement (AWE) has shifted the focus away from making things happen on campus to engendering new programming at the workplace of the industry partner.

This vision came from the president of the Rutgers University Foundation and the Assistant Vice President of Alumni Engagement, recalls John Borgese, director of alumni workplace engagement. “The simple reason was that they wanted to think of innovative ways to engage with alumni; for years, we have traditionally reached out and asked alumni to share their expertise, give money, come back to the university,” he explains. “Ours is the exact opposite; we bring the university to the workplace.” AWE is seen as a way to reach out to alumni in a more comfortable environment. “It starts to build bridges between alumni, companies as a whole, and universities as a whole,” says Borgese.

In some ways, he continues, the concept was born out of necessity. In the traditional alumni programs, he notes, “you develop the program, you go to the company, you meet all the top executives who may be your alumni, but you have all these individual silos. Senior leadership of the foundation engages with the highest alumni in the organization, but as with so many different academic units, each one has their own director of development. What happens if after initial meetings occur, there is not this one universal accountability factor built in where you had a person or department that goes and leverages those programs and builds relationships with the company and acts as a single contact?”

The early stages

When Borgese took his position in September 2018, “they had already done the research” in terms of identifying alumni in corporate positions, he shares. “What I needed to do was work with my immediate supervisor and fine-tune things. We looked at the list of companies and quickly identified 20 within a 50-mile radius that [combined] had over 24,000 alumni working for them.”

Noting that a “team of one” could not possibly attack all 20, he pared his targets down to four or five workable companies. The criteria included: a critical mass of alumni, a history of philanthropy (whether at the individual or organizational level), existing partnerships or relationships from the organization back into the university, and whether significant research had been conducted with the university.

“Each academic unit or center worked in their own lanes, and we wanted to leverage those -- not to take them over, but to enhance them,” Borgese adds. “We also wanted to see if these companies had matching gift programs. I’m not a fundraiser, but I open doors for more fundraising to occur.”

Borgese conducted a good deal of internal research with the help of the IT research team. “I did a lot on LinkedIn, and then submitted a request to our research team and cross-checked names,” he shares. This helps, for example, to identify career moves that take an alumnus from one company to another. “It helped clean up our database as well,” he says.

He also worked closely with Sacha Patera, who heads up Rutgers’ Corporate Engagement Center and who began her tenure at approximately the same time he did. “I leveraged her research as well,” he notes. “We put together ideas and strategies and talked about the different organizations.”

He also had help from a key industrial partner. “Rutgers has had a long relationship with Prudential Financial,” he says, noting that the company had started the Pru/RU Connection about 10 years ago. “I leveraged their leadership because they had been there, done that, and they had been wonderful mentors to other organizations,” he notes.

Focus on customer experience

When the time came to reach out to the alumni, Borgese leaned on his years of experience in corpo-

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continued on page 56
rate sales and sales team leadership. “I took the same approach -- focus on customer experience,” he says. “I asked questions, like what are some of the objectives that the alumni within the company want to achieve? If I helped them achieve them, it would help build a bridge back to Rutgers.” The common themes of programs he offered to the companies fell into four pillars:

• Networking
• Mentoring
• Professional/career development
• Talent acquisition

“We targeted specific organizations to develop this programming internally -- within the companies,” Borgese explains. “We focused on small wins within that company, by identifying what their objectives were within each pillar. What I try to do is become that bridge -- a ‘master LEGO builder’ -- to make those connections back to the university. That’s what’s so important about what I call my internal partner consortium -- I know where to go.”

Ultimately, he says, these programs offer the following benefits:

**Advantages for Rutgers alumni:**

• Identifies new career paths within an organization.
• Promotes mentorships between all professional levels while enabling networking between departments.
• Increases volunteer and service opportunities, which also support career growth.
• Encourages employees to seek out professional development and training opportunities.

**Advantages for companies:**

• Infuses new ideas company-wide as young alumni put cutting-edge concepts into practice.
• Helps make high-level company goals more actionable by developing key strategic partnerships with Rutgers faculty and students.
• Supports higher employee retention by fostering relationship-building while offering low-cost training and life-long learning programs from Rutgers.
• Promotes the business to other organizations and community members associated with the university.

**Sowing seeds, sprouting growth**

Borgese notes the initiative involves a long-term process, starting with small steps of growth and hopefully leading to rich, full partnerships. “We started by looking at how to get our feet in the door,” he shares. “Two organizations stood out almost immediately,” one of them being BristolMyersSquibb -- a logical choice not only because of their engagement record, but because “BMS is located literally over the fence from us.”

The initial outreach, he recalls, was “just through a good old-fashioned cold call. I had a list of alumni who were engaged, who had high-level positions.” He divides his prospects into two well-defined groups, which he calls “executive champions” and “boots on the ground” -- the “doers,” if you will.

“The senior executives are not necessarily the ones who put in the time, but they offer guidance and structure,” he explains. “The ‘boots’ are the go-getters, looking to drive their careers and get active.”

Borgese began to develop “a little network” of alumni at BMS. “We had an initial event, a faculty lunch & learn, where we provided the lunch,” he relates. “Out of that, three alumni took the ball.” They introduced him to someone in talent acquisition who could help drive the message internally. “He’s actually not a Rutgers alum, but he saw the value of the program, and said, ‘I wish my alma mater would do something like this,’” Borgese recalls.

One of the three alumni was a research scientist. “He started a discussion on how to get a group like this going within BMS, and started his own path with conversations and communication,” says Borgese. “They started doing a lot of internal work and started recruiting people.”

He notes that when an alumnus gets a letter from their university, they might be a little reluctant to respond because they think they’re going to be asked for money; they’re more likely to respond to a fellow alum. “We quickly identified that the way to get a program going is internally, and you start small,” says Borgese.

In the fall of 2019, he was invited to an “internal trade show” of business resource groups at BMS. And while it turned out he was not able to attend, the alumni group extolled the benefits of what a Rutgers alumni group in BMS could do. “From that event they had 65-75 alumni say they wanted to get involved,” Borgese reports.

One of the key contacts from that meeting was an HR executive who was the father of a recent alum, and who sits on an executive council that meets with the CEO on a quarterly basis, “so we got very strategically placed,” Borgese states.

The council wanted to focus on women of color... continued on page 57
among the staff, so the HR person suggested developing a program on women and STEM careers, targeting summer interns and co-op students (not necessarily all from Rutgers). “They came up with a four-week webinar series in July 2020, featuring four different panels, all women, a majority of whom were Rutgers alumni,” says Borgese.

As the word got around internally, interest was generated not only among interns and co-op participants, but also among Rutgers alumni. “This catapulted the BMS-Rutgers Alumni Group, which called themselves BRAG,” Borgese recalls. “BRAG is not considered a business resource group or an affinity group, but it became a very powerful partner to both of these groups.”

BRAG was so successful they began thinking about what else they could do. “They started accumulating their knowledge of relationships already occurring within BMS; I started doing the same thing and came up with four pages of programming and existing relationships, pre-relationships, or those being developed within the two programs,” says Borgese. “That enabled me to bring my internal partners to them and really fine-tune them within BMS under the AWE program.”

Recently, he notes, Rutgers has been asked to provide resume workshops through partnerships with the BMS talent acquisition team to help their internal employees advance their careers. “We’re now developing a retention program to show them how to help keep their best employees,” says Borgese. “This will be under the BRAG umbrella.”

**Customized programs**

Because the programs are geared towards the needs of the individual companies, Borgese notes, the formats will vary. For example, based on existing relationships at JP Morgan Chase, three alumni had been assigned to the development officer of the academic unit. “They were sold on AWE; they brought me to a meeting, and we discussed with them what an alumni group within JP Morgan could mean,” he recalls. “They have a huge tech arm, so this was the window I went in. They have single point of contact to me, called their ‘Executive Chairman.’ He took the four pillars and recruited colleagues he knew were Rutgers alum to oversee each of the pillars.”

Whatever the structure, Borgese continues, it’s all about that relationship building. “Philanthropy is key, and it takes time to build relationships with organizations, and then leverage that,” he says. “We also work closely with Sacha from the corporate engagement perspective; what could the organization as a whole bring to us from philanthropic side?”

As for best practices in alumni engagement, he favors one in particular. “You have two ears and one mouth -- use them in ratio to each other,” he advises. “It’s not what’s important to the institution; it’s up to the company and the alumni to identify what their objectives are. Ultimately, you can sell what you want to sell if you develop the relationship the right way.”

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**Preparation is key**

Even experienced faculty vulnerable to potential pitfalls during engagement

Common wisdom might hold that veteran faculty innovators are universally better prepared to interact with industry partners and are therefore less likely to commit some of the most common errors to which their less experienced colleagues are prone. But, according to two vice presidents of tech innovation consulting firm Fuentek, LLC, that’s not always the case — and in fact, some of them may actually be more likely to commit “unforced errors.”

“[These pitfalls] are very common,” says **Becky Stoughton**, MBA, CLP. “It’s not hard at all to come up with examples where I’ve observed them.”

“It may even be worse if they are more experienced,” adds **Danielle McCullough**. “[Faculty] can be so self-focused they may not think a lot about what they’re trying to achieve with their audience. With new faculty, they don’t know what they don’t know. With experienced faculty you have to try to reshape them, which can be more difficult.”

Stoughton and McCullough unveiled their list of “Potential Pitfalls of Innovator Involvement” during a brief (10-minute) “Tools in 10” presentation at the 2021 AUTM conference, held virtually last month. They include:

- Dominating the conversation
- Delivering the wrong message
- Sitting mute
Pitfalls continued from p. 57

• Focusing on minutae
• Revealing proprietary details
• Overlooking opportunities
• Getting defensive
• Talking to the wrong person

With some experienced innovators, Stoughton notes, dominating the conversation can definitely be an issue. “As they progress in their careers, there’s a tendency to fail to recognize that they are not in the role of a professor” when collaborating with industry, she observes.

McCullough adds that this attitude can also impact how the intended message is delivered. “If you’re ingrained in academia, your job is to seem all-knowing,” she observes. “In working with industry, you’re trying to foster relationship and collaboration. If you can’t get faculty to think about who they’re talking to and delivering the message, you can get off on the wrong track.”

The danger of becoming defensive certainly falls across the whole gamut of experience, she continues, noting that negative feedback can be hard to take in. “Once you’re engaged in conversation with industry, they often look to move quickly and not beat around the bush,” she explains. “You have to prepare the inventor to take feedback, to see it as an opportunity to improve. You could say, ‘If you feel this is not what you’re looking for, what other ways could we go?’ Retrain their gut reaction to critical feedback.”

Stoughton agrees. “You could put some of the onus on industry a bit; This industry is a hard-charging one; I expect they’ll want to go fast,” she offers as a way to gird faculty for the experience. “You want to proactively prepare the faculty innovator for engagement. ‘Here... continued on page 59

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**Figure 1**

Use AMMO to Hone Your “Pitch” *

*(It’s all about them.)*

- **Audience**
  - Identify target audience

- **Message**
  - Refine core message to match audience

- **Mechanism**
  - Select best tool for conveying message to audience

- **Outcome**
  - Determine CALL TO ACTION and metrics for assessing success

*The AMMO concept is quite versatile and can be useful when applied to any communication with any audience.

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**Figure 2**

Technology Overview

- **Technology Description**
  - A 2-4 sentence paragraph starting with “This technology is… that states clearly what it is (e.g., a sensor, software, material, therapeutic) and mentions the most important benefits, quantifying them if possible

- **Potential Benefits**
  - List of 3-4 benefits in the following format:
    - Key phrase (e.g., improved quality) + brief substantiation/explanation of the benefit, e.g., non-invasive fiber optic monitoring device

- **Potential Applications**
  - List of 3-4 industries or potential end users who might benefit from the technology/invention, e.g., medical implants and laparoscopic devices

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*The AMMO concept is quite versatile and can be useful when applied to any communication with any audience.*

*Technology Name*

- A clear, compelling phrase that concisely describes what your technology/invention is and does for a potential partner who is not necessarily a technical-domain expert, e.g., Non-invasive Fiber Optic Monitoring Device

*Potential Benefits*

List of 3-4 benefits in the following format:

- 1-2 word core benefit + brief substantiation/explanation of the benefit, e.g.,
  - Improved quality - non-invasive fiber optic monitoring device

*Potential Applications*

List of 3-4 industries or potential end users who might benefit from the technology/invention, e.g.,

- Medical implants and laparoscopic devices

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*To see the full version of this article, please refer to the University-Industry Engagement Advisor.*
is what I expect from this individual based on what I know from the company and the individual.”

Regardless of the experience level of the faculty member, notes McCullough, it’s important to know who they are and what motivates them -- and to face whatever challenges might arise. “Lots of folks are very hesitant to push on senior faculty; there are all sorts of interesting political dynamics, but you have to be willing to navigate that,” she states. “Another challenging dynamic is that younger faculty are seeking industry relationships because they’re a good source of funding. You’ve got to understand the dynamics of who needs whom.”

Be prepared

Whatever the background or experience of the faculty member, it is critical that they be adequately prepared for a meeting with industry, say McCullough and Stoughton. “A little bit of preparation has huge benefits,” says McCullough. “Just mentioning, for example, the fact that you might get critical feedback, so be ready for that, and here are some ways to turn that around. We do role playing, pretending to be the company and presenting them with challenges.”

“It’s also helpful sometimes to share some anecdotes about times when [undesirable] things have happened,” adds Stoughton. “It’s sometimes easier for a faculty member and researcher to hear about how someone else has behaved, rather than saying, ‘Be careful not to do this.’ Bottom line: anecdotes can be powerful.”

The Fuentek team uses a number of tools and forms in the training process, some of which are better suited, say, for an elevator pitch, while others for a longer meeting. Once such concept, called AMMO (Audience, Message, Mechanism, Outcome) covers some important marketing basics, such as identifying your target audience, matching your message to the audience, choosing the best tool for communicating that message, and identifying the desired outcome and what would be needed to get there. (See Figure 1)

“The AMMO tool helps you put yourself in another person’s shoes,” notes Stoughton. “AMMO forces you to think through everything you know about a technology that would be apropos for the audience.”

If you’re preparing for a longer meeting, she continues, the Technology Overview (See Figure 2) is an ideal preparation tool. “What you want to do, big picture, is to briefly explain to a representative from industry what a technology is and does, and what you believe the potential benefits and applications are,” says Stoughton. “Tech Overview is perfect for that. Then, stop and listen to the response you get, and be able to take things in whatever direction, based on what makes sense for both of you.”

The overview, she continues, helps the inventor and industry get on same playing field. “It’s a joint starting place -- the big picture -- and it’s introductory, and meaningful,” she says.

“Even if the conversation is going to be an hour, there is a formula to talk either about a specific technology or the research that you do,” adds McCullough. “If you’re coaching innovators, the key is to listen to that. Many faculty innovators want to get up and show slide after slide, like they’re at an exposition. You want to tell industry about the work you’re doing, the impact, and then try to make a connection with the problem they have. While the overview may only take three minutes, it’s the foundation of a relationship.”

The biggest issue in preparing faculty, she adds, is making sure the tools you provide them are simple and straightforward. “Anywhere you can simplify things, and apply a formula, that helps your inventors and you,” she asserts. “They feel more comfortable, and everything goes more smoothly.”

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Pitfalls continued from p. 58

Neither the prestige, size, or location of a university or a company are prohibitive any longer for university-industry collaborations. In our annual

Guest Commentary

Prestige, size, and location no longer restrict university-industry collaboration

By Dr. Ruth Kirk
Communications & Content Officer
IN-PART

Neither the prestige, size, or location of a university or a company are prohibitive any longer for university-industry collaborations. In our annual
2021 survey of the industry engagement and R&D communities, we found that these factors are considered by only a minority of teams when starting new partnerships. In this article, we aim to address why that is the case and what factors corporate engagement offices and R&D professionals do take into account when setting up new university-industry collaborations.

For industry engagement professionals in universities and R&D decision-makers in industry, finding the right partner to establish a collaboration holds many challenges. There are a variety of factors that must be considered. In our survey, conducted at the beginning of 2021, one of the questions we asked our community was what are the most important factors that you consider when deciding to work with a new academic or industry partner?

For the R&D community, the prestige, location and size of a university or research institute are the least important factors in their decision to work with them. Only 8% of the R&D professionals surveyed said that the prestige of an institute is a factor they consider, and only 9% said that location is important. No one said that they factor in institute size. (See Figure 1.)

This is not a completely new finding. The R&D community had already told us in 2019 that location was the least important factor when evaluating an innovation or breakthrough from academia.

This outlook is also reflected by the industry engagement community. Only 10% of the professionals who completed our 2021 survey said that the location of a prospective industry partner was a significant factor in their decision to start a collaboration, while 17% identified the prestige of the company as important. And only 15% considered the size of the company. (See Figure 2 on page 61.)

**Collaboration goes global**

This attitude towards prestige, size, and location for forming new university-industry partnerships is in part a reflection of the global nature of the research ecosystem. Science isn’t limited by borders. But in terms of how that plays out practically for scientists and partnership teams in industry and academia, recent changes forced on the ecosystem by the COVID-19 pandemic have also played their part.

For some universities and companies, notably those in Australia, Asia and the Western Americas, keeping in touch with collaborators across hefty time differences through video conferencing was already fairly standard prior to COVID-19. But now, for universities and companies around the world, the pandemic has accelerated the transition to ubiquitous online communication.

Most corporate engagement teams and R&D professionals (those not working directly in the lab) have been working out of their homes now for the best part of a year. With travel restrictions,

**Figure 1: Data from IN-PART’s 2021 annual survey with responses from 109 senior R&D professionals working in companies located across four continents for a multiple-choice question.**

<table>
<thead>
<tr>
<th>Factor</th>
<th>% of respondents who identified each factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment of the research/technology to company requirements</td>
<td>91%</td>
</tr>
<tr>
<td>Stage of development</td>
<td>50%</td>
</tr>
<tr>
<td>Cost/benefit or economic analysis</td>
<td>38%</td>
</tr>
<tr>
<td>Having the academic involved in the project</td>
<td>10%</td>
</tr>
<tr>
<td>Prestige of the university</td>
<td>9%</td>
</tr>
<tr>
<td>Location of the university</td>
<td>8%</td>
</tr>
<tr>
<td>Size of the university</td>
<td></td>
</tr>
</tbody>
</table>

Source: IN-PART
in-person meetings have been off the table, and this has forced everyone to become fluent using online communication tools. While face-to-face conversations are still valuable and will eventually return to some extent, widespread online communication has effectively removed the need for collaboration partners to be in the same country or region of the planet.

When we asked what ‘positives’ our community was taking from the pandemic, a majority said that the biggest positive has been the shift to online communication. Out of the 73% of industry engagement professionals who said they have taken positives from the pandemic, 46% said the best thing has been the improvement in communication with industry through digital tools. This response was echoed by the R&D community. Of the 68% who have taken positives from the pandemic, 65% of those named the increased use of digital communication as the main positive for university-industry collaborations.

If the shoe fits it doesn’t matter so much where it was made. This was something we confirmed last year through an analysis that looked at the conversations R&D teams had been starting with universities through our Discover service. The majority of these conversations were with institutes outside the global top 100.

As both universities and companies increase their use of online resources to connect, this has the effect of leveling the playing field, making expertise available regardless of where it’s situated. With the increasing use of online tools such as IN-PART, it’s now easier than ever for smaller, specialist institutes to have greater visibility, and for companies of any size or shape to discover novel technologies in universities across the world.

Through our matchmaking platform, 75% of the 9,000 conversations started between universities and companies have been between teams in different countries.

**Alignment of research interests**

The most crucial factor for both parties when considering an opportunity to collaborate is the alignment of research interests. Academic research, innovation and expertise need to be very well matched to the R&D interests and requirements of the company for them to make the investment of time and resources worthwhile.

In our 2021 survey, there emerged a clear winner that the university and industry community consider when looking for new partners. Within our university community, 94% said that they valued the alignment of research interests as the most important factor in collaborations. This is in complete agreement with 91% of the responses from our industry community.

We saw a similar pattern of response in our 2020 survey, with 71% of industry respondents agreeing that universities needed to better align their research to their needs and requirements. And this was reflected by the corporate engagement community, where 75% of industry engagement professionals agreed that research needed to be better aligned to R&D requirements. Ultimately, it’s crucial for both sectors to ensure they’re working towards goals that are aligned.

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**Figure 2: Data from IN-PART’s 2021 annual survey with responses from 69 technology transfer professionals based in universities located across six continents for a multiple-choice question.**

**In our 2021 survey, we asked the university community: What would you say are the most important factors that you consider when deciding to work with a new industry partner?**

<table>
<thead>
<tr>
<th>Alignment of research interests</th>
<th>% of respondents who identified each factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-house expertise at the company</td>
<td>54%</td>
</tr>
<tr>
<td>R&amp;D capabilities</td>
<td>52%</td>
</tr>
<tr>
<td>Access to facilities</td>
<td>17%</td>
</tr>
<tr>
<td>Prestige of the company</td>
<td>17%</td>
</tr>
<tr>
<td>Size of the company</td>
<td>14%</td>
</tr>
<tr>
<td>Location of the company</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
</tr>
</tbody>
</table>

Source: IN-PART
Augmented reality lab takes flight

Oakland U makes potential industry partners ‘an offer they couldn’t refuse’

Convincing a roster of collaborators including General Motors, Siemens, MAHLE Industries, ABB Inc., AM General, Continental, Hirotec America, KUKA Robotics, Magna International, Rave Computer and the U.S. Military Ground Vehicle Systems to become founding industry partners to fund an ambitious Augmented Reality Center (ARC) may seem like a tall mountain to climb, but Khalid Mirza, PhD, ARC Founding Director, puts it in the simplest of terms: “We made them an offer they couldn’t refuse -- by presenting a business case,” he asserts.

Of course, it wasn’t quite as simple as that. In fact, he relates, it began three years ago when his students started to try to address virtual reality in their projects when Mirza was serving as a director of the Chrysler Lab and Industrial Robotics Lab at Oakland University’s School of Engineering and Computer Science. Interest was growing among industry sponsors, who saw VR as an emerging technology. “Then, there was more interest in how we might use gaming technology in the world of industry,” he adds. “We started talking with Epic Games, as a lone lead [sponsor for the ARC]. They proposed to us that if the university could get industry interested in adapting augmented reality, we could ‘plant’ something here.” Something clearly was “planted,” and Epic is also providing financial support through its Epic MegaGrants Program, a $100-million initiative.

Louay M. Chamra, PhD, dean of the School of Engineering and Computer Science, adds that the other key element in the successful launch of ARC was the inclusion of the College of Creative Studies in Detroit -- and its focus on art and industrial design -- to the partnership. “You should not underestimate this collaboration,” he asserts. “It’s very important when you bring engineering and industry together to [include] design, to be sure all students emphasize the power of industry education and then collaborating on augmented reality.”

The U.S., notes Mirza, is far behind Europe in this space. “We thought this was an opportunity for our university to take the lead,” he shares.

Fine-tuning the vision

“We went through several iterations in fine-tuning our idea and [determining] what role we could play,” says Mirza. “How we can have industry closely collaborate with our faculty and stu-
dents, and how can we help industry?” he shares. “If we understand their needs and implement those in the center and have our students and faculty work on that, and develop a training program … everyone benefits. We create the workforce needed in industry and satisfy their immediate needs to solve their problems and have them come up to speed in immersive technology.”

Immersive technology, he continues, was essential to the vision of the center. “There is so much technology, engineering, hardware and software, but it only makes sense to the user if there is a visual appeal,” he states. “How you deliver the information, how it is presented, makes a whole world of difference. We very early on identified that the key was not just the engineer, but the engineer plus creative. We were able to present that vision to the college, and they were on board right away.”

That support made the “sell” to industry that much easier -- as, did, he adds ironically, the advent of COVID-19.

“During COVID, we tried to gauge the interest of industry, and we thought it would slow down because they’d be looking inward, but at the same time it presented us the opportunity to ask them to think a little ahead. What if restrictions stay around longer? How would they interface with clients? Having something in your toolbox like virtual reality or augmented reality you can present in 3D to remote clients; that made sense to them and they jumped on it.”

In addition, says Chamra, the majority of these companies have a long history with Oakland’s engineering program, hiring many students for both full-time work and internships. “Also, a majority of them sponsor senior design projects -- capstones. They like our students, and there’s always a balance between theory and hands-on learning. Industry here is very progressive and always looking to the future workforce.”

Making it work

A vision is one thing, a reality another. So, how is the vision coming together? The center will be built within an existing university building. “We will have two locations,” says Chamra. “We will have a research center, where both faculty and students will be able to collaborate [with industry], and a demonstration center that will be open to the public.”

The purpose of the second location, says Mirza, is to promote technology and innovation.

“Students, faculty, and visitors will be able to look at state-of-the-art technology,” he explains. “Projects will happen in a separate space; Louay will have to bring equipment and labs into the existing space.”

When the project was proposed to the industry partners, he continues, $1 million for four years was included in the budget. That is earmarked for the cost for faculty, to create programs for the students, “and to do whatever is needed for the center to grow,” he explains, adding that other running projects, which could be company-specific, will come with their own funding. “If GM wants to, it can bring in staff to do research with students and faculty. ARC will provide the students and build space,” he explains.

“Some companies may also give us in-kind donations such as computer equipment,” Chamra adds.

The center will offer a number of ways for the university, the college, and industry to interface. For example, the founding partners will serve on an Industrial Advisory Board alongside Oakland University faculty. “We’re working with the founding members to try and satisfy their needs,” says Chamra. “There are several different formats we’re looking at -- there could be certificate courses added to the bachelor’s, short workshop summer programs, and so on.”

He notes that some industry-related programs are already established in the school, such as a two-year metal-forming program where experts come in and give lectures, with participating companies also committed to giving summer internships. “I anticipate similar programs for ARC,” he says. “I really think it’s very important for people working in industry to come and bring real life problems to the classroom. Students should be able to hit the ground running when they graduate. I also anticipate a capstone project that integrates augmented reality in industrial development of certain products.” Chamra also envisions K-12 outreach to “get kids excited.”

The center is formally open, says Mirza, although it will take at least until the end of the summer to create the showcase. “It will be a learning experience, creating demos industry can learn from,” he says.

Unique offerings

Mirza sees the center as offering a unique solution to unmet needs. “One of the things I feel is needed in both universities and industry is a skill set focused on immersive technology,” he says. “This program is cross-disciplined; usually you do not get students having exposure this broad. Our continued on page 64
goal is to produce very focused modules, from the science behind immersive technology, to the creative, to the user experience.” Many of the modules, he adds, will be open to both undergraduate and graduate students.

The center will produce a “win-win” for the university and its industry partners, says Chamra. “The university should always look for how we can offer programs that get industry to hire our students and to work together,” he says. “By bringing this technology to the classroom, it will enhance our academic reputation and of course benefit our graduates. For industry, we will not only work on solutions for them, but they will also be able to have the opportunity to hire our students and provide the workforce they need for the future.”

“My background is in industry,” adds Mirza. “In industry there are gaps that are not being filled by academia. What Oakland has done was tremendous; we listened, and we focused on those areas. Industrial robotics was one; we worked on it and we now have a great program. The same in augmented reality. Industry has teams, but they are often in separate bins. We put students and faculty together from two diverse schools, which is very unique. They’re excited, because we’re producing something that was not there.”

Both he and Chamra agree the new center will help strengthen existing industry relationships and create new ones; in fact, it already has. “Epic Games is new,” says Mirza. “They told us that the close relationship we’ve formed, and the support they’re getting is unique to them -- they see a really big opportunity for them to address issues in industry, and they’ve reciprocated in a very big way.”

Invidia and Hirotec are also new to partnering with the university.

“For existing partners, it makes the relationships even better and stronger,” Chamra adds. “It’s built the opportunity to collaborate on many other opportunities beyond augmented reality. Anything we do with industry and deliver on promises will enhance the relationship. Any relationship is built on trust, and I expect the relationships with Epic Games, Invidia, and Hirotec will get stronger.”

In addition to the center’s founding partners, “ARC will be open to others,” notes Mirza. “We have a list of many companies that have never been involved with us. We truly see that as we launch this center there will be many others who will have the chance to become members and realize the mutual benefits.”

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