*Technology and Innovation*, Vol. 19, pp. 000-000, 2018 Printed in the USA. All rights reserved. Copyright © 2018 National Academy of Inventors.



#### Randolph Hall<sup>1</sup>, Jennifer Dyer<sup>2</sup>, and Kimberly A. Macuare<sup>3</sup>

<sup>1</sup>Office of Research, University of Southern California, Los Angeles, CA, USA <sup>2</sup>USC Stevens Center for Innovation, University of Southern California, Los Angeles, CA, USA <sup>3</sup>National Academy of Inventors, Tampa, FL, USA

#### Chapter founded in: May, 2017 Number of Chapter Members: 320 Number of U.S. Patents issued to USC inventors as of April 16, 2018: 1,142

**Fun fact:** For the USC chapter launch in May 2017, Vice President of Research Randolph Hall elected to hand sign all (over 300) certificates, risking finger cramps, instead of resorting to an electronic signature. He believed it was important to personalize each membership certificate and learn the names of all the USC inventors that were being inducted into the chapter.

In this month's NAI Chapter Spotlight, we highlight the University of Southern California (USC) Chapter, whose launch event on May 3, 2017, was hosted by the USC Stevens Center for Innovation. The mission of the USC Stevens Center for Innovation — USC's technology transfer office — is to maximize the translation of USC research into products for public benefit through licenses, collaborations, and the promotion of entrepreneurship and innovation. They manage university-owned intellectual property (IP), stemming from over \$700 million in annual research funding, in all areas of the university, including medicine, engineering, sciences, and the arts. USC's vice president of research, Dr. Randolph Hall, recently joined T&I in a conversation about the breadth and depth of the USC innovation community, innovation impact beyond patents, and the importance of doing scholarship with consequence.

#### What motivated USC to launch an NAI chapter?

To bring together all the individuals in the university community who are engaged in innovation in a single venue. In other words, it was a reason to connect people who might not otherwise be connected. We have a very big and broad university with many locations throughout the region, including Los Angeles and San Diego. It's also broad in terms of the disciplinary focus — engineering, medicine, science, etc. Typically, the people who are engaged in

Accepted: March 1, 2018.

Address correspondence to Randolph Hall, Ph.D., Vice President of Research, University of Southern California, 3720 South Flower Street, #325A. Los Angeles, California 90089-0706, USA. Tel: +1 (213) 740-6709.

innovation know other people in the invention arena, in their departments and possibly their schools, but this was a way to bring together people across the entire university and honor that whole group at once. Last spring, we honored people for their work and then inducted them into the chapter. When we held the event, we offered two kinds of honors: one to be inducted into the chapter, and the other for those whose patents or software had been successfully licensed within the last year.

Given that you do have people who are working across a broad spectrum at different campuses and at very different levels, what are the requisites for membership in your chapter, and how does that selection process work?

We have a set of criteria. For instance, to be an NAI fellow, you need to have an issued U.S. patent, and we used that same criterion, which led to more than 300 people being inducted. We do have many people in the university, faculty predominantly, who have issued U.S. patents. That's the reason why our chapter is so large.

We will broaden our criteria in the future, partly to recognize our very large program in computer science research. We're typically in the top three nationally in federally funded computer science research, but much of what people do in the computer science field does not involve patents. Our initial criteria may have left out much of that group, but we can see that they do things that are very impactful. In fact, when we look at the most important innovations coming out



Figure 1. USC researchers and members of the USC Chapter of the National Academy of Inventors (left to right) Shrikanth Narayanan, Wee Ling Wong, Albert (Skip) Rizzo, and Cyrus Shahabi enjoy the chapter launch reception in Downtown Los Angeles.

of the university, so many of them have not resulted in patents. For example, we were the creators of the domain name system that's used to record every internet address in the world, and, at one time, we managed the domain name system for the entire world. That is something that wasn't patented, but it's nevertheless very impactful. So, we want to be able to recognize that community as well.

### Could you describe for us what USC's invention and innovation landscape looks like?

It's very broad and has many facets to it, so I'll start by speaking from an organizational standpoint about how we work.

The Stevens Center for Innovation is our technology transfer and commercialization office. Its job is to protect USC-owned IP and to find the industry partners to commercialize that IP. That can come through corporate sponsored research agreements, or it can come through a licensed technology. They also organize innovation activities. For instance, they host a student innovation showcase every year where students compete for prizes with their inventions and start-up concepts.

There are also many school-based programs, and there are a few other university-wide programs with more focused purposes. For example, the Marshall School of Business, with undergraduate and graduate programs, has the Greif Center for Entrepreneurial Studies. They educate students through a wide variety of courses and through incubation activity for student entrepreneurs. They also put on a showcase of technologies for students, as well as mentor students. Marshall received recognition this year for launching a course on IP where students learn the principles of IP protection, how it builds industries, and how to use it strategically. The course is a great example of the Marshall School's success.

Within our Viterbi School of Engineering, we also have a set of entrepreneurship and innovation programs, such as the I-Corps node, which is part of the national I-Corps program that provides training for innovators from both inside and outside the university. That means that it's not just USC that participates, but the community at large. The I-Corps program is focused on market discovery, educating innovators on how to understand what the market might need, and then crafting a company and technology to meet needs. I-Corps awards funds to faculty and students to help develop a company or to help build out prototypes for companies.

We have so much going on, but I'll just mention one other thing that's quite big at USC. It's called the Alfred Mann Institute for Biomedical Engineering at USC, or AMI. AMI has a very large endowment that was provided by Alfred Mann, who was very successful in the medical devices sector. AMI offers gap funding in the life sciences space. Specifically, they take research that occurred in USC, further develop it, and then help commercialize it. It's partly funding that goes to a project, but also staffing to support the transition out of the university. AMI has a budget in the range of five to ten million dollars per year, so it is probably one of the largest programs of its kind anywhere in the country. The institute has launched a range of technologies, some of which have produced international products and publicly held companies.

One last thing I'll point to is a website we maintain called Incubate USC (incubate.usc.edu), a resource created to connect faculty, students, and staff with all the different programs that exist inside the university. It's a one-stop shopping site, created with support from the Blackstone Foundation in association with our Launchpad site. In addition, I organize meetings among our innovation program leaders. We have more than 40 programs that fit into innovation and entrepreneurship. We meet regularly to share USC activities, including pitch competitions, industry speakers, mentorship programs, and technology transfer. Having our leaders in the same room helps to coordinate our many activities.

To sum up, we have a single office to oversee all of the business aspects of intellectual property, protection of intellectual property, and licensing, and that's the Stevens Center. We have many other programs that have been developed across our various schools that have advanced innovation in particular areas, and that's represented in Incubate USC. As an entrepreneurial university, we encourage all parts of the university to create new programs to advance innovation.

Overall, USC has an extraordinarily rich innovation culture. It's not centrally directed, and we don't put any rules around whether or not someone can create an innovation group, program, funding, competition, or event. People are empowered to create programs at USC, and, as a result, we have many, many activities. Some of these activities overlap with each other, and, in the end, that's fine because I don't want to inhibit people in any way from coming up with innovative ideas.

#### What kinds of activities has the chapter sponsored so far?

USC Stevens will be hosting a new Innovation Summit with UCLA in fall 2018, and we are very excited about that opportunity. We also hold an annual USC Stevens Student Innovator Showcase in the fall, which is a business competition for USC students where we award more than \$30,000 in USC-sponsored prizes.

There are two other things that we're doing as a university that connect to the chapter. We recently became part of a group of universities that form the Alliance for Southern California Innovation. This is a new consortium that includes universities in the Los Angeles region as well as the San Diego region, and our intent is to broadly publicize the innovation that's occurring in our area.

The second thing I would mention is called Silicon Beach, located in the Westside region of Los Angeles, where tech start-ups, including a blend of computer science and Hollywood-style media, are located. In fact, computer science, entertainment, and game development have been major areas of our research through our Institute for Creative Technologies. Silicon Beach has received a lot of attention of late.

USC has been instrumental in forming the Alliance for Southern California Innovation and in building Silicon Beach. Another big goal for university impact is building up a biotech research park around our Health Sciences Campus. That will be the next item on our agenda.

#### When USC did the chapter launch event, how did the faculty respond?

They loved it. We held it in the USC building, a large high-rise structure in the downtown area where we are the major tenant. It's the home for the Stevens Center, our technology transfer office, along with many other functions. We wanted to draw attention



**Figure 2.** Speakers at the launch of the USC Chapter of the National Academy of Inventors were (left to right): Jennifer Dyer (Executive Director, USC Stevens Center for Innovation), Randolph Hall (USC's Vice President of Research), Robert V. Duncan (Board Member of the National Academy of Inventors and Vice President for Strategic Research Initiatives at Texas Tech University), and Michael Arciero (Director of Technology Licensing & New Ventures, USC Stevens Center for Innovation).

to our place in downtown, which itself has undergone a huge change in the last five years because of an enormous amount of development occurring in the neighborhood around our USC building.

When we gave out awards, people were tremendously honored. Some received multiple recognitions. We awarded certificates to all USC NAI chapter inductees. In addition, people whose technology had been licensed received a Lucite award. The event showed that USC cares about people who are coming up with ideas that benefit society, ideas that were reflected in the patents that we've obtained and the licenses that we've signed, which means somebody wants to take the technology forward. Traditionally, when somebody gets a patent issued, they'll be notified, but this is more. This is a way to show that we care.

# Why do you think it's so important to recognize academic innovation?

In our strategic plan, we emphasize "scholarship with consequence." We do research and conduct scholarship within the university, and that research results in publications. Most publications get cited, but, in the end, we don't do research solely so we can talk to our colleagues. We want to do research that benefits society. That's what we mean by consequence. We want to create within this university an environment where our faculty, students, and staff can thrive through the impact they're creating, benefitting real people and not just the scholarly community. That's the kind of thing we want to recognize in this program. So far, we have focused on the initial group of patent holders—the group of inductees— mirroring the criteria that NAI itself has established for the fellows, but we want to broaden that to recognize everywhere impact is occurring. Of course, the reality of the patent itself is maybe a step towards impact, but it doesn't guarantee impact either. We want to honor innovations that are being adopted and used broadly around the world.

### In starting the chapter and holding your first induction event, did you learn anything through that process? Are you thinking of doing anything differently next time?

In launching our USC NAI chapter, we wanted to include all the USC faculty that had issued U.S. patents in our inaugural class, but we found the task of identifying these faculty members to be challenging. We were able to search patents assigned to USC and pick up a lot of the faculty, but it was more difficult to



Figure 3. Randolph Hall, USC's Vice President of Research, delivers opening remarks at the launch of the USC Chapter of the National Academy of Inventors.

identify those whose patents were assigned to other organizations. Also, it would be great to recognize our inventors who work in areas where patents are generally not filed—for example, software and gaming.

I wouldn't do it differently, but the thing we will probably be doing more of in the future is recognizing people through an event where we invite people from outside the university community and where we feature the work of the university, so it becomes more of a showcase.

# Do you have any advice for institutions launching their own chapters?

It's important to think about the entire community of innovators. For example, we started out with those who have issued patents, and those are predominantly faculty. There are some graduate students too, and occasionally you may have undergraduates. In addition, innovation comes from alumni. Something to consider is how you engage beyond the faculty group. If you look at how the university impacts technology and innovation, much of it does emerge from inside the university, but even more of the impact occurs later from our alumni. We educate students, and they go on and do big things. We need to pull in the community that's connected to the university but are not necessarily working at the university. Those are things for us to consider going forward. Specifically, we also had some important takeaways involving the selection process and the event itself:

- a. You have to do your research. Identify as many eligible faculty as you can (despite our best efforts we missed some people). Allow yourself an extended lead-time before your launch for the process of identifying your faculty inventors.
- b. Promote your event. Our faculty members were quite excited, so it is worth the effort to market and highlight the new chapter before and after the launch event. Our chapter launch event became a special occasion for our faculty: It allowed our university's inventors, across diverse disciplines, to mingle with their research colleagues, with previous collaborators, and with other inventors across the university they may not have had the chance to meet prior to our event.
- c. Put thought into materials provided to the members of your new local chapter. For our new chapter members, we had gold-foil

embossed document folders printed specially for our event with our university seal on the outside, and we put the professionally-printed membership certificates in the folders. We also gave them the hand-painted National Academy of Inventor chapter member pins. The faculty loved the recognition and felt honored.

d. Get input. Engage with some of your key faculty regarding the chapter, and find out what they would like from the chapter. At the USC Stevens Center for Innovation, we have our own Faculty Advisory Committee, and from consulting with the members of this committee, we were able to get the perspective of actual faculty members in building our chapter.

#### What do you see for the future of your chapter?

The main thing we'll emphasize is creating a broader innovation and invention community that goes beyond the university. To that end, we are holding an annual USC NAI Chapter induction ceremony and networking event in conjunction with our annual USC Stevens Commercialization Awards, which recognize the commercialization success of technologies developed by inventors across USC.

We also plan to hold events that highlight the work that we're doing, to showcase it both internally and externally so that we can increase our impact. It's not just about creating a club, but about initiating and supporting a group of people who can do scholarship with consequence.