Student Patents on Inter-University Projects

Mel I. Mendelson,¹ Mark Rajai²
¹Loyola Marymount University / ²East Tennessee State University

Abstract

In most universities the students relinquish their patent rights when they enroll in courses. A different model is proposed where the students can own their patents and receive 98% of the net income, or they can assign the rights to the university and receive generous royalty sharing.

I. Introduction

In 1999, a grant between Loyola Marymount University (LMU) and East Tennessee State University (ETSU) was obtained from the Lemelson Foundation [1]. The goal of the grant was to develop joint, collaborative curriculum in New Product Development and Entrepreneurship between the two universities. Here teams of students from both universities interacted as joint companies to create new products that improved the quality of life for people [2-4].

Prior to releasing the funds, the Lemelson Foundation requested that both universities submit their intellectual property policies. After further investigation, it was discovered that the patent policy of each university was totally different. This occurred because LMU is a small, private university in California, and ETSU is a medium-size state university. The key question was: “What should be the patent policy for two universities working on joint projects?”

In addition, the collaboration of the student teams created another intellectual property issue: “What are the patent rights of the students?” Our intent was to be creative in solving the student patent issues. It should be mentioned that the ideas in this paper have not been fully implemented. The purpose of this paper is to describe the process that was used to determine ownership and distribution of income between two universities and the students.

II. Background

The formation of two joint graduate courses, New Product Development and Entrepreneurship, was between LMU’s Engineering and Production Management and MBA graduate programs and ETSU's Engineering Technology Department. The New Product Development course also involved industrial consultants from TRW and Boeing, who were experts in concurrent
engineering and virtual e-teaming in order to satisfy the conditions of the grant. Here four LMU teams of 4-5 students per team collaborated with four ETSU student teams that were working on the same product. For example, the LMU/ETSU teams worked jointly on the following four products: multi-purpose walker for the elderly, portable wheelchair, user friendly seatbelt, and impact resistant bumper for automobiles. For each product, the LMU/ETSU teams worked together as joint companies to define the problem, establish the customer needs and markets, design the product, construct a prototype, develop marketing and manufacturing plans, and conduct the product economics [2, 3].

Since LMU was the lead institution on the grant, the first step was to create a subcontract agreement with ETSU that identified the obligations and terms/conditions for working together. The subcontract agreement established LMU’s statement of work, disbursement of funds, and cancellation of funds for non-performance. The statement of work described the shared deliverables of the two universities, i.e., course syllabi, lectures, class notes, assignments, project concepts, log-books of team activities, data generated by the teams, and reports/presentations of the teams. Lastly, LMU’s interim patent policy was included in the subcontract agreement.

Since our Lemelson grant was awarded in July 1999, we had about one month to plan and organize the intellectual property issues prior to the start of the Fall semester. ETSU had a patent policy that was in accordance with the state of Tennessee laws [5]. LMU had to rely on an interim patent policy that was drafted by its university attorneys. This interim policy had not been approved by the LMU faculty and Board of Trustees. During the period of the grant (August 1999 - December 2000), it became apparent that the interim patent policy had to be modified in order to meet the needs of the students and faculty. This paper will describe LMU’s interim patent policy and the new (modified) policy that is currently being evaluated by the faculty.

III. Interim Patent Policy

One of the first issues that needed to be resolved was the intellectual property differences between the two universities, which are shown in Table I. Because these differences were large, it was initially determined that both universities could not own the patent rights on a joint product. Only one university would own the intellectual property on any project. From discussions with our industrial consultants, the patent rights would be decided by a Patent Board that reviewed the team projects. The criterion for ownership was determined by the university team that contributed the majority of the ideas to the project [6]. Then the Patent Board would give its recommendations to the vice presidents of the two universities.

Table I. Patent policy differences between the universities, showing LMU’s interim policy.

<table>
<thead>
<tr>
<th>Intellectual Property</th>
<th>LMU’s Interim Patent Policy</th>
<th>ETSU’s Patent Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources used in work</td>
<td>Any university equipment,</td>
<td>University cost &gt; $1000</td>
</tr>
</tbody>
</table>
The university that owned the patent rights could file for a patent and market the inventions. Any net income (i.e., revenue less expenses for patenting, marketing, licensing, or managing the invention) generated by the patents would be distributed to the students according to the royalty sharing in Table I.

### IV. Features of New Patent Policy

A two step process was used on the teams’ products: (1) determine whether the student projects were patentable, and (2) establish which university or students owned the patent rights.

First, a Patent Board was established that included the principal investigators from both universities (Dr. Mendelson from LMU, and Dr. Rajai from ETSU) and a patent attorney. The purpose of the Patent Board was to recommend the products that could be patentable and the university or student team that would own the patent rights. Towards the end of the New Product Development course, the student teams gave their final project presentations to the Patent Board, and the board evaluated the products that the teams developed. The products were evaluated in terms of their design/manufacturing creativity, market potential, profit potential, and patent potential. An example of the survey that was used is shown in Appendix A. The opinion of the patent attorney was weighted most heavily in this evaluation.

Second, if a team project was worthy of filing a patent, the Patent Board had to determine which university owned the patent rights. The criterion for ownership was determined by the university that contributed the majority of the new, non-obvious and useful ideas to the project. The documented results that were signed and dated in the team log-book were used to resolve any conflicts on which team developed the most unique/useful ideas for the invention. If a clear-cut decision could not be reached on which university contributed the “majority of ideas,” then it was assumed that both universities contributed equally to the invention. In this case, both universities would share equal ownership to the patent, and the royalties would be divided equally between the two universities. Then each university could distribute the royalty income according to its own policy. In addition, the names of the student teams from both universities would appear on the patent application.

The problem with LMU’s and ETSU’s patent policy (see Table I) was that both universities assumed ownership of the students’ patent rights when the students used university resources.

The following table summarizes the decision on patentability, ownership of the patent, and royalty sharing with the students:

<table>
<thead>
<tr>
<th>Decision on patentability</th>
<th>Ownership of patent</th>
<th>Royalty-sharing with students</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMU patent board advising Academic Vice President</td>
<td>LMU if university resources are used</td>
<td>75% of first $1M, and 50% &gt; $1M of net income</td>
</tr>
<tr>
<td>ETSU research committee advising University Vice President</td>
<td>ETSU depending upon resources used</td>
<td>&lt; 25% of net income</td>
</tr>
</tbody>
</table>
Under LMU’s interim policy, the students were required to sign a declaration saying that they would relinquish their patent rights if they used any university resources (i.e., funds, materials or facilities). The students were not employees of the university and were not paid for their services (i.e., work for hire). The students were paying customers. Without their tuition and enrollment in courses, the university would not exist. So, why should the university own their patent rights?

Based the above argument, two cases were established. Case I was student ownership of the patent rights, and Case II was university ownership. For Case I, it was decided that ownership of any patent evolving from student work submitted in fulfillment of academic requirements would remain with the student inventor(s). Here the inventors would pay for the patent application and maintenance fees if the students elected Case I. The students who were taking the New Product Development and Entrepreneurship courses were required to sign a copyright and patent disclosure. Any discovery or invention would be disclosed to the University’s Intellectual Property Committee by means of an invention disclosure. After submitting this form, the student(s) would have up to six (6) months to decide whether they would pursue a patent application.

If the students decided not file a patent application within 6 months, then the invention would become the property of the university (subject to the rights of any outside sponsor), i.e., Case II. If the university decided to file a patent, it would pay for the patent application and maintenance fees and the expenses for marketing the invention. The names of the student inventors would appear on the patent as representatives of the university, and any net income would be shared with the students. In addition, any inventor who requested an exception to the new patent policy or wanted to challenge a patent decision could appeal it to the Intellectual Property Committee. In most situations, the students would elect Case II unless they had entrepreneurial intentions.

V. Distribution of Income

For Case I, the inventor would be required to donate 2% of the net income per year into a separate university account to keep the project self-sustaining in the future. This net income would be under the control of the faculty advisor in the course. The rationale is that the smaller universities want to encourage student entrepreneurship. LMU does not expect to make much profit on their intellectual property, but successful inventors are expected to payback small contributions to the university for future projects.

For an invention in which the students assign the patent rights to the university (Case II), the distribution of income was taken to be the same as the interim policy in Table I. The royalties that the university receives would be placed in separate university accounts. Two percent (2%) of the net income per year would be placed in a project account, which would be under the control of the faculty advisor. The balance of the net income would be placed in separate research account, which would support invention, entrepreneurship and scholarly activities in the college where the
academic work originated. The faculty advisor and Dean of the college would have access to this account.

For example, in Case II, if the invention generated a net income of $500,000 per year, the university would disburse $375,000 (75% x $500,000) to the inventor, and the university would receive $125,000. The $125,000 would be divided-up into $10,000 (2% x $500,000) for the project account and $115,000 (balance) for the research account. From the authors’ experience, LMU’s royalty sharing with the students was more generous than that of most other universities [8].

VI. Conclusions

The following ideas, recommendations and conclusions originated from this paper:
1. Collaborative work between a small, private university and medium-size state university on joint projects in the New Product Development and Entrepreneurship graduate courses created special issues relating to the patent rights of students.
2. There were large differences between LMU’s interim patent policy and ETSU’s patent policy.
3. A Patent Board determined which student projects were patentable and identified which university students would own the patent rights. If a clear-cut decision could not be made, then both university student teams would own the patent, and the royalties would be equally divided.
4. If the students own the patent and commercialize the product, then they would donate 2% of their net income per year to the university to keep the project self-sustaining in the future.
5. Even though the student teams owned the patent rights, they could assign them to the university if they decided not to file a patent. If the university decided to file a patent, it would share the most of the royalties with the students. The balance would be shared with the faculty advisor in a project account and with the college (where the invention originated) in a research account.

Acknowledgements

The authors wish to express their sincere gratitude to the Lemelson Foundation for funding grants #262-99 and #377-0 and to our industrial consultants, Bryne Bostick (TRW) and Hollis Bostick (Boeing), and our patent attorney, Jeff Sheldon, for their assistance in this project.

Bibliography


7. Jeff Sheldon (patent attorney), Sheldon & Mak, 225 S. Lake Ave., 9th floor, Pasadena, CA 91101; phone: (626) 795-4000.


******************************************************************************
Appendix A
Survey: Patent Potential of Student Products

Product: ______________________________

1. How unique is the product concept?
   5   4   3   2   1
   Extremely Innovative Somewhat Little No innovation

2. How non-obvious is the concept?
   5   4   3   2   1
   Extremely non-obvious Somewhat Little Obvious

3. What is the utility of the concept?
   5   4   3   2   1
   Very high uses Many Some Little No uses & markets

4. What is the patent potential?
   5   4   3   2   1
   High Good Some Little None

5. What is your recommendation on filing a patent?
   5   4   3   2   1
   File patent File after Hold/maybe Not sure No patent
immediately more research

6. Comments of reviewer: **What needs to be done** to make the product patentable?

Signature: __________________________________________ Date: ________________

Reviewer

*******************************************************************************

*  

**Mel I. Mendelson**

Received his B.S. from UC Berkeley and his MS. and Ph.D. from Northwestern University all in materials science. He completed one-half of his courses towards an MBA at Northwestern. He has over 20 years of industrial experience. He currently is an associate professor of Mechanical Engineering and director of the Engineering and Production Management graduate program at LMU (Los Angeles, CA). He is currently program chair of ASEE’s Graduate Studies Division.

**Mark Rajai**

Received his B.S. and M.S. in mechanical engineering from University of Tennessee, his master’s degree in engineering management and Ph.D. in industrial engineering from University of Louisville. He has 7 years of industrial experience. He currently is an associate professor of Manufacturing Engineering Technology and coordinator of the Engineering Management master’s program at East Tennessee State University.