FSU Office of Intellectual Property Development and Commercialization

Program, History, Current Directions

Enhance the Reputation of FSU
Demonstrate Engagement with the economy to create Jobs
Have a measurable Impact

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Executive Summary

The purpose of this document is to provide information about the FSU technology transfer Program, its History and Current Directions in one place.

It covers:

- What we have accomplished
- What we have learned
- Applying What we Learned

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Stages in the Life of the Office

The life of the Office can be described in several Phases, as below. The information on Office transactions (as defined by AUTM) for each Phase can be found at[1] or Appendix A.

Phase 0: 1996 to 1998. Start-Up: John Fraser arrived in November 1996 to set up and operate FSU's technology transfer office. A Strategic Plan was created and approved by the newly formed FSU Research Foundation (Appendix B) to fund the Office to meet Goals (outreach to faculty, patent filings, GAP program, start-up funds). On Fraser's first day, the FSU President told him a story of 'entrepreneurship ' in Tallahassee. The punch line was entrepreneurship was one lawyer selling another lawyer a piece of dirt. The Chamber of Commerce crowd where this occurred found the story true and hilarious. Proved to be correct for 12 years. Signs of change appearing.

Phase 1: 1998 to 2004. Taxol Era: Significant Taxol royalties arrive from the deal with Bristol Myers Squibb signed in early 1996. Taxol royalties funded start-up and initial office operations.

Phase 2: 2005 to present. Taxol royalties ended in 2008. Funding for Office operations was switched to VP Research Overhead funds. The Office recreates and refunds the Valley of Death/GAP program in July 2005. Start-Up funding recreated and relaunched as Venture Boosters in December 2005. Launch not successful and terminated in 2007. Advice to other parts of the Office of Research on unfavorable IP terms in proposed FSU contracts ramps up.

Phase 3: 2008 to present. Increased educational outreach through Workshops and 1 on 1 meetings; acceleration of Spinoff Company creation begins with state SURCAG grant and state Institute business assistance. The Tallahassee community has shown increasing willingness to ask: How can we help you? Formerly it was: How can FSU help us make money? This change is encouraging, as it has been followed up by offers to mentor and finance the right start-up.

Phase 4: Current operations: Continuing Education; licensing transactions; supporting faculty on industry contracts, SBIRs, and start-ups.

[1] http://www.research.fsu.edu/techtransfer/tts.html

What is technology transfer at FSU?

When the Office was opened in 1996, FSU did not have a Medical School and the research was not a priority at the Engineering School. These two Faculties are the two sources of disclosures and licenses at larger, older programs and were unavailable at FSU.

Through our efforts, the Medical School faculty are engaged with us and submitting their share of disclosures earning a similar share of GAP funds. Now, specific faculty are actively engaged in the Engineering School.

From the beginning, technology transfer at FSU by necessity has focused on a broad array of activities: assisting faculty to build the research base via sponsored research; traditional patent licensing transactions; pursuing copyright licensing, as well as encouraging faculty start-ups.

Current Vision

- We encourage and help the FSU community to:
  - Be a source of creative ideas and inventions with potential to become products of benefit to people and the economy.
  - Create research collaborations with the private sector.
- Currently the focus is on faculty, graduate students and staff with FSU owning the IP.
- Aim: Help implement the FSU 'Entrepreneurial University' and undergraduate students would be included.
- Aim: When legislators ask what role FSU research plays in growing the Florida economy, have clearly documented successes, readily understood plans and goals for expansion with specific milestones and accountability.

Mission & History

- Mission: Assist FSU achieve its goals for improved education, research and community service by creating partnerships between university researchers and outside organizations to develop products and knowledge for the benefit of society[2].

- In support of its mission, the OIPDC has four core goals implemented by staff (Appendix C):

  - Educate: the faculty, the local community and State legislators of the benefits and potential of research innovation;

  - Communicate: to the faculty, the local community and State legislators and entrepreneurs the ongoing achievements of FSU faculty and students;

  - Build the research base: through partnerships with the public and private sector for sponsored research and various transfer mechanisms and expand awareness of the quality and breadth of FSU research;

  - Create knowledge-based economic development: through startup company creation and support this development with mentoring, finding external funding and entrepreneurs.

Current Program: Services and related Goals

Educate:

- Engage faculty in the Commercialization Process (Appendix D).
  - [Goal- increase Work and Invention disclosures by a minimum 10% every year (e.g. from the current 63 add 6). Also each year, obtain 10% of new disclosures from faculty not engaged before];

- Faculty to describe their research to the lay public and to be engaged in the commercialization process via the internal 'GAP' grant process. This program provides grants of up to $50,000 from FSU funding for 'proof of concept' product definition.

[2] http://www.research.fsu.edu/techtransfer

- [Goal-increase faculty applications from the current 16 per year by 4 each year with at least one application each year from a new department/faculty. Increase budget by $150,000];

- Using IP Seminars on Patents and Copyrights for faculty and researchers demonstrate benefits to research career of participating in commercialization. Presentations are also made to Deans of large Faculties and in Departmental settings.
  - [Goal- increase frequency to one such event per month];

- Life Sciences Roundtable Day with outside speakers to familiarize faculty with corporate needs and corporate thinking and to provide alternate career experience to postdocs.
  - [Goal – increase to quarterly per year.];

- Continue to participate in community-organized events to showcase successes and impact of Office efforts.
  - [Goal-increase to 4 times per year at Rotary, etc].

<u>Communicate</u>:

- Continue to celebrate successes and inform of events by contributing to Office of Research Newsletter to faculty. Make / OIPD&C web site more user friendly.
  - [Goal- contribute monthly to Newsletter to increase faculty and researcher awareness, then engagement via disclosures];

- Increase Community attendance at twice yearly GAP Meetings.
  - [Goal- increase local Angels attendance in audience to 3 individuals/meeting to increase awareness and licensing deals];

- Press Releases for each License deal. Currently, there is a Press release for every deal, which is published locally.
  - [Goal –to increase readership / awareness of FSU engagement through publication in at least 3 statewide publications];

- Annual Sneak Peek Community Event. An annual event created 5 years ago to showcase via posters and trade show booths, campus research in the commercialization pipeline. Attendees have seen research projects grow to

spinout companies with local employees. Technology driven economic development from FSU is real! 200 community attendees.
  - [Goal- increase attendance and participation of local Angels in start-ups as mentors and investors. Increase awareness and participation of FSU business alums via selected projects with FSU fund raising unit];

- Annual Faculty Recognition Event. Now in 8th year, the VP Research hosts an event acknowledging and thanking faculty involved in all stages of the commercialization process. 150 campus attendees.
  - [Goal-continue];

- Statewide Activities. Fraser is Chair of the committee of Directors of Institutions with Technology transfer (FITT); 1 of 5 Board Directors of the Florida Institute for Commercialization, the legislatively funded organization to accelerate formation and growth of licensed start-up companies; Executive Committee member of the Florida Research Consortium, a statewide organization created by the Governor to provide advice on deeper engagement of Florida universities with the economy. These activities ensure FSU profile and participation in the policy making discussions which set the entrepreneurial environment in Florida.
  - [Goal - ???] .

<u>Build Research Base:</u>

- Encourage and evaluate Invention and Work disclosures, seek IP protection, consider each for the GAP process to add value prior to licensing to start-up or existing companies.
  - [Goals- increase license deals from 10-12 per year by 2-4 (15%-20%) over next 3 years, while maintaining the license/option to disclosure ratio at 25% (the national average) over next 3 years];

- Continue the internally funded GAP program (Appendix E) ($250,000 per year). In its 8th year, an internal 'proof of concept' program with 20-minute faculty presentation before a 9-person committee of persons who head technology businesses. Program review has shown positive impact in growing research base and increasing licensing.
  - [Goal- increase faculty applications from 14 to 16-17 (15%-20%) over next 3 years with appropriate increase in budget];

- Internal GAP 2 program (one-time budget of $150,000). The intent was to provide a cash match to a company grant after GAP project funding. Of the 5 projects, 2 lead to increased sponsored research.
    - [Goal- ??];

- Internal Equipment Grant Program ($250,000 per year). In its 8th year, a small grant program for faculty who apply from different departments. Awards fund equipment to create data to strengthen future federal applications. Program review has shown positive impact in growing research base.
    - [Goal- maintain budget];

- Help faculty apply for external tech transfer programs – federal SBIR, Florida Dept. of Health TTF's, Florida SURCAG. Assist faculty develop/improve commercialization sections in applications. External specialists have been engaged from time to time to assist faculty with commercialization and budget sections of SBIR/STTR applications.
        - [Goal- see launch of S-Bridge program].

- Licensing Program

    - Transfer via option/license. Respond to requests for licenses using standard form contracts. Experimenting with use of Express Licenses as used by UNC-CH to simplify start-up license negotiations, yet protect FSU position in long term success. Work closely with Betty Southard, Office of Research General Counsel.
        - [Goals- increase license deals from 10-12 per year by 2-4 (15%-20%) over next 3 years, while maintaining the license/option to disclosure ratio at 25% (the national average) over next 3 years];

    - Contract R&D with IP. Offer assistance to other offices re IP term negotiations. Approximately 65 times a year, we offer advice on unfavorable IP terms in corporate or government contracts under negotiation. Process has speeded decision point to where either acceptable language is created (50%); or unacceptable terms are accepted routinely (certain Foundations (50%).
        - [Goal- continue to respond as needed].

Contribute to Economic Development (Jobs, Investment $$):

Start-up program: (BUILD Together Program, Appendix F):

Originally proposed in the 1998 Office Strategic Plan as a program to support faculty interested in starting a company to further commercialize their research. 36 start-up licenses have been signed to date. 13 remain very active. Over the last 3 years, the 12 have raised $ 35 million in equity and revenues (See Appendix G). At any time we have 2-3 potential start-ups in the pipeline. We organized a series of breakfasts for local Angels to inform them of opportunities about to emerge from the campus, in which they might be interested in participating financially. 9 of the 13 projects have received GAP funding previously. (Angels are invited as guests in the audience to the GAP committee meeting to hear about these early stage opportunities). Of the 13, 2 were acquired by other corporations. For the rest, success is down the road.

Assistance is also provided to FSU licensed start-ups to obtain Florida Institute[3] for Commercialization loan financing. For each dollar invested by a SEC qualified investor, the Institute will loan up to $300,000 on unsecured, limited interest terms. Since program initiation in 2012, $900,000 in loans has been offered to FSU companies.

- [Goal- based on faculty interest, increase the number of licensed start-ups and assist the Business School with student lead start-ups.

[3] Florida Institute for the Commercialization of Public Research - http://www.florida-institute.com/

HISTORY: Transaction Results (Quantitative Program Results)

We have accomplished a lot with relatively modest resources. The license/option deals to disclosures ratio of 25% is the same as the national average. The patent budget and number of licensing people per office for FSU is smaller than the national average.

See the Product Pipeline diagram in Appendix H for the end result of Office activity - products moving to and in the marketplace based on FSU inventions. Appendix I contains the Product Showcase – stories of the products in the marketplace.

ITEM during	FY 1996	FY 2012
People	1.5	5 FT + 1 FTE (OPS)
Licensing People	1	2.0 FTE + 1 Open
Invention Disclosures	7	62
Work Disclosures	0	10
Patent applications	17	84
Patents Granted	7	28
Licenses Signed	2	13
Active Licenses/Options	9	80
Startups (Active)	0	2 (14 of 36)
Royalty Non Taxol	$273,345	$1,331,453
Royalty Taxol	$9,586,986	$0
Other Revenues	0	$20,000
Yearly R&D Commitments	0	$3,432,840
Total non Taxol Revenue	$273,345	$4,784,293
FSU R&D Expenditures	$91,294,249	$220,000,000

See complete yearly data since 1996 in Appendix A.

The list of yearly Office budgets is contained in Appendix J to allow comparison of Funds invested and Results achieved. Increases in Office budgets over the past 5 years have been confined to winning external, competitive SURCAG grants

($450,000 for internal expenditures to accelerate start-ups (including $200,000 of internal matches) and an additional $450,000 in grants to match funds raised by other start-ups); a one-time internal Patent budget increase of $200,000 and a one-time internal GAP 2 program ($150,000).

Metrics of Progress and Metrics of Ultimate Success:

The traditional AUTM metrics measure Office transactions, but are incomplete when evaluating Impact, or even the financial return on financial investment (fROI).

It is recognized that different Metrics can be used depending on the age of the Office. For an Office over 15 years old, the ratio of Licenses/options to Disclosures is still important, and largely under the control of the Office, but the real Impact (not under the control of the Office is products in the marketplace, and, depending on the date of market entry, lives saved, or measured increase in productivity or competitiveness). This information is very hard to obtain.

So, because the following is under the control of the Office, the FSU Office tracks sponsored research obtained linked to IP or through our critical assistance to others in the Office of Research.

For licensed start-up companies, the Office has also collected information on Funds raised and current Jobs created (see Appendix G).

The office has expanded the Metrics to include anecdotal stories submitted to the AUTM Better World Report, (e.g. the Solar Sausage, the Underwater Crime Scene Investigation book, the Career Portfolio); the Product Showcase (Appendix I) and the Product Pipeline (Appendix H).

The last time the Office of Research conducted a Faculty Satisfaction Survey, 10 years ago, our scores similar to other Office units serving faculty.

Societal Impact

A. Taxol: A Vice president of Bristol Myers Squibb told us that for the Taxol semi-synthesis created by Bob Holton and licensed to BMS:

> "For the first 5 years after market introduction, the FSU licensed technology was used by 2 million women globally in their fight against breast and ovarian cancers. In addition, the 4.25% FSU royalty on BMS sales to distributors translates to a small cost to the patient at the bedside of only ½ cent for each course of Taxol."

B. See Product Pipeline for projects in pipeline (Appendix H)

Like any major research university, there is an array of research and creative activity ongoing across campus. The Product Pipeline shows the Office engagement with a representative sampling from Science to Art to hardware to software and web based material. The Pipeline shows where projects are in the various commercialization stages: Projects reported (70); prior to License ( ); during License under product development prior to market entry ( ); still in the Market (38), previously in the Market, but no longer (15) due to company decisions.

C. See Product Showcase: Stories of FSU inventions developed into market products (Appendix I)

I believe the Office is fulfilling its mandate of helping faculty commercialize research with corporate partners to create products (53 to date) that save lives or improve productivity and build the research base (assisted faculty to bring $46.8 million over the 15 years (see below).

History: Cumulative Program Financial Results

	THEN	NOW	Cumulative Totals
	1996	2012	
Staff	1.5	5 FTE + 1 PT OPS	
Cumulative Deals Done	9	155 (incl. 36 start-ups)	
Cum. Non Taxol royalty (Income) *		$ 19.2 million**	
Cum. R&D contracts (Income)		$ 27.6 million	$ 46.8 million (=19.2+27.6)
Cum. Office Budget (Expense)	$ 300,000	$ 7.0 million	
Cum. Patent Investment (Expense)		$ 7.7 million	
Cum GAP Investment (Expense)	$ 0	$ 1.8 million	$ 16.6 million (=7+7.7+1.8)
Net contribution to FSU			Net Benefit = $ 30.2 million

* The massive Taxol royalty cash flow of $351 million is not included in this sum as it is an outlier and would unfairly represent normal Office operations. That cashflow terminated in 2008.

** Of the $19.2 million shown for cumulative non-Taxol royalties, approximately $10 million is one project (See Appendix K). Due to early agreements, the $10 million is gross sales by an FSU soft money Center, not actual royalties. The actual distributions of 'royalty payments' for this project amounted to $2.8 million approx. over the years.

No matter how it is viewed, the cumulative Royalties exceed Office costs + Investment costs for a net gain to FSU.

The real conclusion from this chart is that over 15 years, $46.8 million was received on campus through the Office assisting faculty, in excess of the associated costs of $16.6 million.

What We Have Learned and How we are Responding

- Florida Engagement: IP Development & Commercialization is being seen as an increasingly important issue in the engagement of universities in the Florida economy.

    - Response: Encourage Faculty Entrepreneurs: Add Business Development 'Start-Up Officer' to increase interest/participation in 'BUILD Together' program - start-up ideas prior to, and from the GAP competition awards, SBIR applications, collaborating with Florida Institute for Commercialization (in effect create a more formal 'accelerator-type' service on campus). The Office will continue to be a key contributor to technology based local economic development. (Cost $100,000+).

- Broad Scope: There is a need to better serve FSU faculty by continuing to broaden Office services and accelerating a 'knowledge transfer' (copyright protected) strategy.

    - Response: This means even more emphasis on actively engaging Faculty in commercialization, proactively seeking sponsored research from Industry prior to out-licensing, helping Faculty though the Start-Up/Entrepreneurship option, as well as regular Patent and Copyright Transactions.

- Faculty Engagement: Increased FSU faculty interest in commercialization activities puts enormous pressure on 'IP protection' and 'GAP' budgets.

    - Response 1: Processes need to be reviewed to enhance effectiveness and then more funds budgeted to respond to the growing level of faculty interest.

    - Response 2: Consider adding a part time 'Life Sciences scout; in the Medical School, Biology, Chemistry/Biochemistry, etc. Consider adding a part time 'scout' in the Energy/Materials area, a FSU priority for faculty hiring.

- Industry Engagement: Need to improve marketing of faculty expertise and facilities for industry-sponsored research.

- Response: Add Business Development 'Partnering Officer' to proactively market selected expertise. (A feasibility analysis needs to be done - the area has clear possibilities, but it is a risk. (Cost - $ 100,000).

- Focus: Focus (working with selected research areas or research centers) for improved efficiency has proved to be much harder than expected.

    - Response: Work in areas of active participants where 'scouts' are proposed.

Additional Opportunities

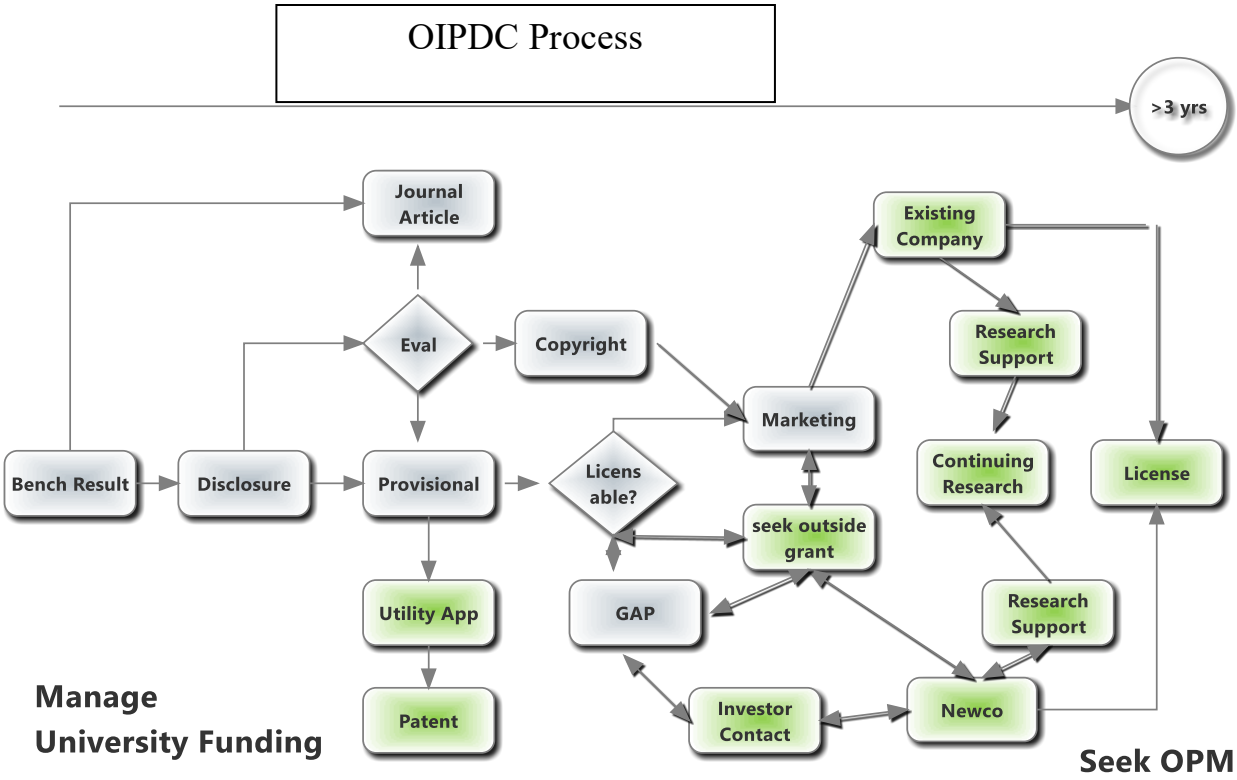
- Virtual Accelerator – Formalize Office giving of advice into a Venture Lab 'accelerator' structure prior to licensing. For examples see Georgia Tech (Appendix L) and UCF (Appendix M).

- Increase outreach in Fine and Performing Arts area where copyright protection works best. The Creative Arts can increasingly document specific impact on local economies.

- Increased involvement in the FSU 'Entrepreneurial University' for graduate students, postdocs and expansion to undergraduate students. Evaluate a program to encourage women to participate as Entrepreneurs

APPENDICES

A. Office Revenues and AUTM Transaction Metrics
B. 1998 FSURF Strategic plan
C. List of Staff
D. Office Process
E. Web site of GAP program
F. List of Start-Ups
G. Start-Up Outside Investment Attracted and Job Creation
H. Product Pipeline
I. Product Showcase
J. Yearly Budgets
K. CPIEP web page
L. Georgia Tech Venture Lab web page
M. University of Central Florida Venture Lab web page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