

WIPO SME Conference in Buenos Aires

July 17-18, 2008, 11:00 a.m. – Noon

Your segment is allowed 15-20 minutes.

The primary objective of the event is to provide participants practical knowledge on the value of the Intellectual Property Rights system and on the strategic role IP can play in accessing/securing finance from private or public sources.

The program is meant for seed capitalists, business angels, venture capitalists, owners and managers of SMEs, universities, research centers, officials from public sector, private intermediary organizations interested in IP and innovation issues, chambers of commerce, trade institutions and other SME support institutions, entrepreneurs, etc.

There are 130 expected participants with simultaneous translation from English-Spanish and Spanish-English.

Theme 1

Theme 1 is about the relevance of IP for acquiring/securing financing: making intangibles a tangible asset. Our premise is that an effective means of accomplishing this is through the development of a solid technology transfer program.

SLIDE 1



- Thank you, welcome, etc...
- First, I'd like to explain that my perspective is shaped by my professional experience. My current position is Vice President of Research at a major academic research institution where we conduct over \$400M in research annually. We have a \$1.6B dollar endowment, \$800M operating budget and my division manages several thousand transactions per year.

- I am an engineer by training and have worked in industry, government, and academia. I have also held various engineering, marketing, and business development positions in those sectors. In addition, I have been an entrepreneur and an early stage venture capitalist. So I believe that I bring a unique perspective to this subject.
- Also, I recognize that the U.S. system is different from yours here in Argentina and it is truly my hope that you find some ideas and tools that you can borrow from what I am about to share with you. I encourage you to look for the similarities, not the differences.

<PAUSE>

- For this presentation, I want to talk with you about the ways in which technology transfer works best in the United States, taking a view primarily from the industry side.
- Twenty-five years ago, thanks in large part to changes in federal law, university research commercialization took off in America.
- So we've had two and a half decades to figure out what works, where the pitfalls are, and how best to proceed to the benefit of everybody involved—especially society.
- It's a work in progress, of course, and we're still learning.

Slide 2

Best Practices in TT: The U.S. Experience

- *Research commercialization at its best*
- *Conflicts and challenges*
- *Tools and processes that bring business and universities together*

- I've divided my presentation into **four parts**.
- I'll start with an example of research commercialization at its best in the United States. (*1st part*)
- Then I'll address the conflicts and challenges that underlie the university transfer of technology. (*2nd part*)
- I'll follow with some tools and practices that, our experience at Case has shown, brings businesses and universities together. (*3rd part*)
- Lastly, I'll open things up for a question-and-answer session. (*4th part*)

SLIDE 3

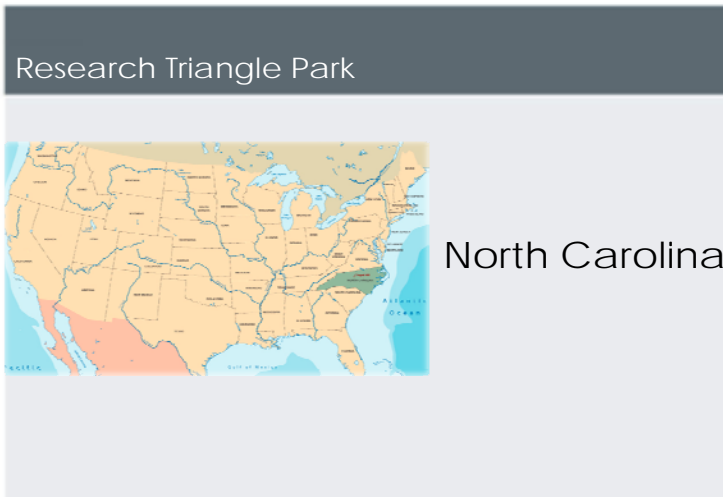
Spinoffs Are High-Performing Companies

- *More likely to go public*
- *More likely to receive venture capital*
- *High survival rate*
- *Highly profitable*

- When it comes to research commercialization at its best, one place to look is spinoff companies.
- Companies like Hewlett-Packard, Cirrus Logic, Genentech, Google, and Lycos all were born from the technological inventions of faculty, students, and staff at American universities.
- While those examples are known around the world, spinoffs are, typically, high-performing companies.
 - At a typical educational institution, university spinoffs are much more likely to go public than the average new firm.

- In one estimate, the percentage of American university spinoffs that have gone public exceeds eight (8) percent, a figure that is 114 times the average for a new company in the United States.
- Spinoffs are also much more likely than the average start-up to receive funds from venture capitalists and business angels.
- In addition, university spinoffs are much less likely than the average start-up to fail.
- Of the 5,800 start-up companies founded since 1980; over 60 percent remain operational, much higher than the average survival rate of new companies in the United States.
- Finally, university spinoffs are more profitable, on average, than the typical high-technology start-up.

SLIDE 4



- Another way to consider research commercialization at its best is to look at one of the country's most successful research areas. No, not Silicon Valley in San Francisco, or Route 128 in Boston . . .
- *Research Triangle Park*, in North Carolina, combines the resources of three leading research universities: the University of North Carolina, Duke University, and North Carolina State University.

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Research Triangle Park (born 1959)

- *2007: 157 R&D firms; 39,000+ employees*
- *1989: 60 R&D firms; 30,000 employees*
- *#1 in Aggregated Innovation Capacity*
- *Average salary: \$56K; \$2.7B annual payroll*
- *Businesses: \$17.8 million in property taxes annually*

- In 2007, RTP had 157 R&D firms.
- The number of employees was more than 39,000.
- Forty percent of the firms had fewer than 10 employees.
- This compares to 1989—30 years after launch—when RTP numbered 60 R&D firms, most mid- to large-sized, and the employee total was 30,000.
- Number one in Aggregated Innovation Capacity (Metropolitan New Economy Index).
- Average salary is currently \$56,000, with a total annual payroll of \$2.7 billion.
- RTP tenants pay \$17.8 million in property taxes annually.

SLIDE 6

Research Triangle Park

- *20 million square feet of commercial space*
- *Research strengths mirror university strengths*
- *RTP research expenditures: more than \$1 billion*
- *Research expenditures at 3 universities: more than \$1.3 billion*
- *No biotech 20 years ago; now #4 biotech hot spot in U.S.*

- Today: 20 million square feet of commercial space.
- Diversified research/industry base; research strengths mirror university strengths.
- Park research expenditures are more than \$1 billion.
- Research expenditures at 3 universities (Duke University, the University of North Carolina at Chapel Hill, and North Carolina State) are more than \$1.3 billion.
- There was no biotech here 20 twenty years ago, and now it's the number 4 biotech hot spot in the United States.
- And University tech transfer was the key in this transformation!

(Part 2. OVERVIEW OF CONFLICTS AND CHALLENGES in university technology transfer)

SLIDE 7



Challenges

- *Funding tech gap*
- *Building IP portfolios*
- *Linking to large companies*
- *Securing investors and entrepreneurs for start-ups*
- *Simplifying legal affairs*

- University tech transfer operates in an environment of unique challenges.
- To work in this environment, understanding them is critical:
 - Funding the technology gap; (*DISCUSS "The Gap" depending upon the audience"*)
 - Building IP portfolios;
 - Making academic discoveries licensable by large companies;
 - Securing real investors and recruiting entrepreneurs for start-ups;
 - Simplifying legal affairs.

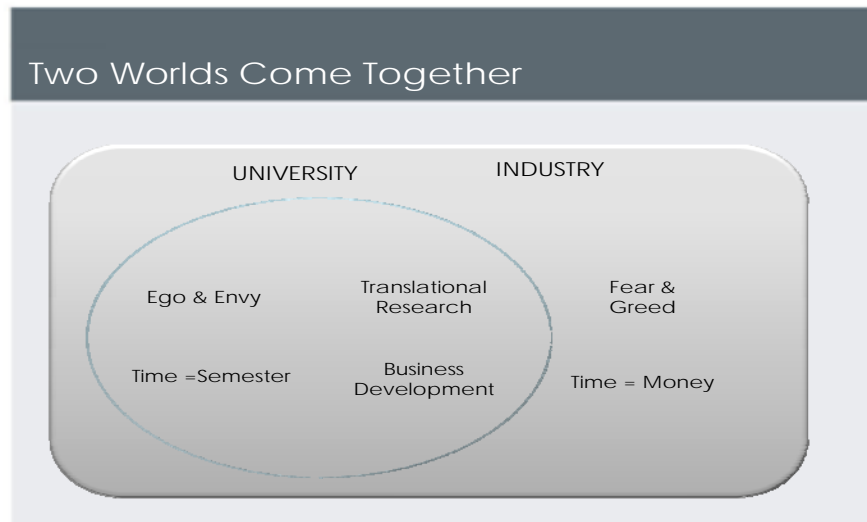
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And More Challenges

- *Managing conflicts of interest*
- *Preserving traditional academic values*
- *Encouraging appropriate entrepreneurship*
- *Controlling risks to endowment and reputation*
- *Setting reasonable expectations*

- Manage—but don't avoid—conflicts of interest and commitment;
- Preserve traditional academic values in an “innovation enterprise”;
- Encourage appropriate institutional and faculty entrepreneurship;
- Control risks to endowment and reputation;
- Set reasonable expectations for success.

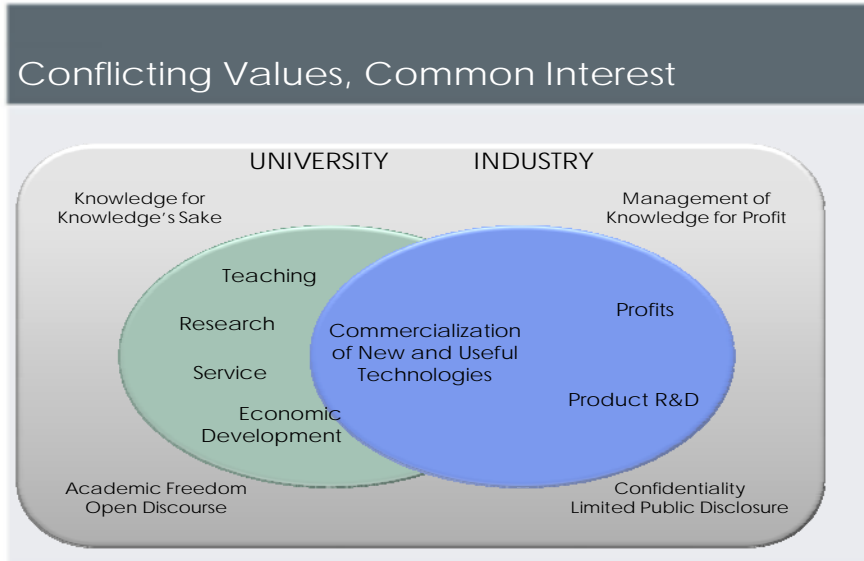
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- One major part of the research commercialization equation is the role of industry in the process.
- Industry plays a critical role in making technology transfer happen.
- But the cultures of companies and universities have pronounced differences.
- **AND, THE NATURE OF THE UNIVERSITY-INDUSTRY DYNAMIC IS A CHALLENGE TO SUCCESSFUL TECH TRANSFER**

Point out: In America, industrial sponsored research ranges from 5-15% of total academic research (~\$50B); this is still considered small relative to government funding. However, industrial sponsored research is a growing source of research support.

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- And it's not only culture that separates industry and academia.
- Their missions, goals, and objectives are different as well.
- However, when we can align mutual interests, the opportunity can be enormous.
- This opportunity is being capitalized upon by direct funding from industry to academe, through consortia, and other innovative partnerships such as government matching fund programs that leverage investment dollars.

(Part 3. EXAMPLES OF TOOLS AND PROCESSES THAT BRING BUSINESSES AND UNIVERSITIES TOGETHER – A key and sometimes neglected component of successful technology transfer!)

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Tools & Processes for Enhancing Industry/University Connections

- Strong IP portfolio;
- Licenses;
- Industry research contracts;
- Industry-focused research centers;
- Research parks.

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- Now let's turn to the mechanisms that can help industry and universities align their mutual interests.
- Although there are others, such as Matching grant programs, Adjunct faculty from industry; visiting professors, Student externships/placements and continuing professional education, I'll go into greater detail on the five shown here.
- The five key issues are strong intellectual property, licenses, industry research contracts, industry-focused research centers, and research parks.

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Strong IP Portfolio

How does IP contribute to a new venture?

- Demonstrates innovation potential of the organization
- Indicates sustainable value
- Is an additional asset to be leveraged
- Reduces the risk of broken deals
- Adds to the bottom line by considerably increasing the exit value

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Licensing – Probability of Success (V_{li})

$$V_{li} = Q_t \times Q_{mkg} \times Q_{lee} \times Pa_t \times Pa_{mkg} \times Pa_{lee} \times I$$

- Q_t = *Quality of technology*
- Q_{mkg} = *Quality of marketing effort by licensor*
- Q_{lee} = *Quality of and fit with licensee*
- Pa = *“Passion for success” factors*
- I = *Image and credibility factors*

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- In the modern era of tech transfer, **licensing** is a primary way that industry connects with universities.
- A license provides industry exclusive or non-exclusive rights to IP; defined as know-how, patents, copyrights, trademarks.
- And I’ve developed an equation to help predict the value and probability of success of a potential technology license.
- A license’s probability of success is equal to the sum of a handful of factors:
 - Quality of technology, plus;
 - Quality of marketing and selling effort by licensor, plus;
 - Quality of and fit with licensee, plus;

- The passion for success exhibited by the technologists, the marketing and salespersons, and the licensee's organization, plus;
- Image and credibility factor.

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Industry Research Contracts

- *Typically single lab*
- *Requires research plan, budget, intellectual property provisions*
- *Provides foundation for building strong technology transfer program*

- A second way in the modern era is through industrial research contracts. Many U.S. institutes actively market research capabilities to industry or engage with industry to learn of mutual research interests.
- Typically research is funded in a single laboratory with funding (direct and indirect) from industry.
- Requires research plan, budget, intellectual property provisions.
- Provides foundation for building strong technology transfer program.
- Licensing is a primary way that industry obtains rights to research results from industrial research contracts.

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Industry-focused Research Centers

- *Multidisciplinary teams, fundamental questions*
- *“Members” and “dues”*
- *Industrial Advisory Board*
- *Support from U.S. government*

- A third way is industry-focused research centers (consortia).
- Typically involve multidisciplinary research team focused on fundamental questions of interest to an entire sector.
- Recruit industry “members”—“dues” actually are the funds used to support research.
- Establish Industrial Advisory Board—interact with institute personnel to establish research agenda.
- Several major U.S. government agencies support such centers.

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Industry-focused Research Centers

- *Generic, pre-market, pre-competitive work*
- *Shared access to IP for industry*
- *Tool for developing specialized research program*

- Focus on generic, pre-market, or pre-competitive work.
- Industry members receive shared access to intellectual property.
- Effective tool for developing specialized research program focused on specific industry needs—leading to important research results, economic development, job creation, and technology transfer.

SLIDE 17 (*OPTIONAL*)

Research Centers: Facts and Trends

- *Formal programs begin in 1980*
- *By 1997, 55 centers at 80 U.S. universities*
- *Multidisciplinary teams on emerging tech clusters*
- *Examples in North Carolina*

- Formal NSF programs for industry/institute centers begin in 1980.
- By 1997, 55 centers at 80 U.S. universities.
- Tend to involve multidisciplinary research teams focusing on emerging technology clusters or industry interests.
- Provides foundation for building strong technology transfer programs.

SLIDE 18 *(OPTIONAL)*

Research Centers: Facts and Trends

- *Win-win: industry reps satisfied*
- *Researchers get support and relevant work*
- *Generates great leverage in value*
- *Prospect of significant commercial products*

- Research shows 90 percent of industry representatives involved with centers are satisfied with the results of participation.
- Researchers receive substantial research support and conduct industrially-relevant work.
- Generates great leverage in value for both parties: Studies suggest that industry members reinvest in traditional research up to approximately 30 times.
- Centers produce, on average, several inventions and patents per year, some leading to significant commercial products.

SLIDE 19 (OPTIONAL)

Research Parks

- *Environment for focused research partnerships*
- *Worldwide phenomenon*
- *UNC: 963-acre research park under development*
- *Case: 2-million-square-foot biomed research campus under development*

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- The fourth way industry connects with universities is through research parks.
 - Research parks provide an environment for focused research partnerships. These parks provide facilities and equipment that in most cases would be too expensive for small companies. So costs are shared by all tenants.
 - They develop clusters where collaborations and network development are easy.
 - Worldwide phenomenon: Every state, region, and country has economic development objectives built around research parks. They work!
 - UNC's 963-acre research park under development—a major cornerstone for economic development impact.
 - At Case, plans are progressing for a research campus called the West Quad, which will contain 2 million square feet.

4. SUMMARY [1-2 minutes]

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Summary: Best Practices in Technology Transfer

- *Tech transfer at its best*
- *Challenges facing universities and researchers*
- *Mechanisms that unite industry and universities*

- The opportunity for collaboration between industry and universities is enormous.
 - There are proven ways to harness that opportunity to the benefit of industry, universities, and the world.
 - I hope you've been able to come away with useful information.
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SLIDE 21 [references]

Among the Source Materials

- Academic Entrepreneurship: University Spinoffs and Wealth Creation, *by Scott Shane. 2004, Edward Elgar Publishing*

- Thank you for allowing me to come and talk with you.
- I look forward to taking your questions.

SLIDE 22 (Case TTO Contact Information)