Creating Technology-based Spin-off Companies

David Myers
RTI International
April 21, 2009
Our mission: to improve the human condition by turning knowledge into practice.

Since 1958

- Headquarters in Research Triangle Park, North Carolina
- Projects in 100+ countries
- Multidisciplinary staff of more than 2650; annual revenue of $700 million
- Expertise in health, education, international development, environmental sciences, and advanced technology
- Many collaborative partnerships
Advanced Technology at RTI

Focus Areas
- Energy
- Microelectronics
- Advanced Materials
- Biomedical engineering
- Technology Commercialization

Revenue: $40 Million
Staff: 180
RTI and Research Triangle Park (RTP)

- RTP -- Founded in 1959 to stem “brain drain” and shift the agricultural and manufacturing economy to a research and technology focus
- Success based on:
  - Proximity to three flagship research universities
  - Private leadership balanced with public purpose
  - A scale large enough to achieve global prominence
  - Patience and perseverance – a long-term view

Research Triangle Institute (now RTI International) – Created as the first research entity in RTP to work collaboratively with the region's research universities with a focus on solving complex scientific challenges and “turning knowledge into practice”.
### RTP Innovation Ecosystem

*Over decades, the RTP region has developed many elements of an innovation ecosystem that interact in discovery, development, production, diffusion and use of new, and economically useful, knowledge.*

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<thead>
<tr>
<th><strong>Entrepreneurship</strong></th>
<th><strong>Higher Education</strong></th>
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<tbody>
<tr>
<td>RTP Incubators</td>
<td>$1.59 billion R&amp;D expenditures in 2007</td>
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<tr>
<td>Park Research Center</td>
<td>NC State University</td>
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<td>First Flight Venture Center</td>
<td>Duke University</td>
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<td>Alexandria Innovation Center</td>
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<td>BD BioVenture Center</td>
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<tr>
<th><strong>Capital Formation &amp; Commercialization</strong></th>
<th><strong>Research Capacity</strong></th>
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<tr>
<td>$430 million average annual venture investment 2002 – 2007</td>
<td>Critical Mass</td>
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<td>A.M. Pappas &amp; Associates</td>
<td>170+ world-class firms employ 42,000</td>
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<td>Aurora Funds</td>
<td>2.1 million m² of developed space</td>
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<td>Dogwood Equity</td>
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<td>Research Triangle Ventures</td>
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<td>Wakefield Group</td>
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Centennial Campus

• University, corporate, and government facilities intertwined to create multi-disciplinary R&D neighborhoods based on the University's strengths in:
  – Information & Communications Technologies
  – Biosciences and Biotechnology
  – Advanced Materials
  – Education

• Quick facts:
  – 5.4 km² area
  – $620 million invested in facilities and infrastructure to date
  – 250,000 m² of space constructed in 25 major buildings
  – 61 corporate and government partners
  – 1,600 corporate and government employees; 1,350 university faculty, staff and post-docs; 3,400 university students;
Research Triangle Energy Consortium (RTEC)

- RTEC is an energy-sector alliance of RTI, Duke University, North Carolina State University, and the University of North Carolina. Established in September, 2007.
- Focus is on solving high-impact energy problems by combining science, technology development, environmental sciences, and policy. “Translational Research”: Basic research with the ability to commercialize.
- Executive Director: Dr. Vikram Rao, former Chief Technical Officer of Halliburton
Why Commercialize Technology?

- **Financial Motivations**
  - Income from IP licensing and spin-off companies
    - Critical source of funds for new technology development projects
  - New research projects funded by licensees or spin-offs

- **Non-Financial Motivations**
  - Organizational mission (“turning knowledge into practice”)
  - Organizational stature
  - Creating an entrepreneurial culture
  - Career path and opportunities for staff (an important tool for attracting and retaining for some of the most creative and ambitious scientists)
### Management of Emerging Opportunities

#### Value of Pipeline

- Common language for discussing the status of technologies
- Clarifies the need to fill the pipeline with high quality new ideas
- Focuses internal resources on technologies with the highest probability of success
- Provides visibility for management from the earliest stages to gain consensus for commercialization strategy and investments

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<thead>
<tr>
<th>Idea Evaluation</th>
<th>R&amp;D</th>
<th>Business Planning</th>
<th>IP Transfer in Progress</th>
<th>IP Transferred to Commercialization Partner</th>
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<tr>
<td>Invention Disclosure 1</td>
<td>Project 1</td>
<td>Program A</td>
<td>Negotiation 1</td>
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<td>Project 2</td>
<td>Program B</td>
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<td>Agreement in place</td>
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Management of Internal Investments

- Even if the only organizational investment is the allocation of staff time, these decisions need to be made wisely
- Focus commercialization resources on those technologies which have:
  - a team and champion with a passion for commercializing the technology
  - a strong competitive advantage versus existing products/services, and those known to be in development
  - a clear path to commercialization (a spin-off or license is within the means of the organization)
Management of Internal Investments

Potential Investments

- “Translational research” to move technology from the bench to the scale which can be accepted by industry
- Building an IP estate
- Market research
- Constructing a business plan (if spin-off)
- Creating an internal management team (if spin-off)
- Executing the spin-off or license

RTI approach is to make substantial investments in technologies being commercialized (fewer, but better funded projects)
Although there are a wide variety of transaction types in each industry, different sectors tend toward preferred mechanisms for implementing technology from external sources:

- Electronics – start-ups
- Energy, Chemicals – licenses, partnerships
- Pharmaceuticals – start-ups, licenses, partnerships

⇒ The approach has to be compatible with practices in the sectors in which we intend to commercialize
## Considerations used at RTI for choosing Spin-Off vs. License

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<th>Criterion</th>
<th>Indicates License</th>
<th>Indicates Spin Out</th>
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<tr>
<td>Addressable Market size</td>
<td>&lt;$1 Billion</td>
<td>&gt; $1 Billion</td>
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<td>Technical Scope</td>
<td>Narrow; can be part of a much larger system</td>
<td>Broad technical platform; multiple end uses</td>
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<td>Technology Development Risk</td>
<td>Commercialization path is lengthy and/or includes significant regulatory hurdles; development costs are large and/or difficult to quantify</td>
<td>Costs to commercialize well defined and tolerable within anticipated internal rate of return (IRR)</td>
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Execution of the Spin-Off: Critical Considerations for Success

Keys to successful execution:
- Experienced, empowered team
- All constituencies represented
- Frequent communication
- Well-understood boundaries
- Thorough planning

Collaboration Strategy
- Implementation plan, key contacts

Execution Strategy
- Expectations, Communications

Organizational Strategy
- Management Team, Transfer of Assets, technical staff

Investment Strategy
- Strategic relationship, Quality of syndicate, Adequate resources, valuation

Technology/IP Strategy
- Ownership Rights, Breadth, Market, Impact to Home organization

Business Strategy:
- Impact to Home organization, Future Relationship, Investment
Case Study: Nextreme™

- **Background:**
  - 1992 DARPA/ONR initial funded work
  - RTI identified novel superlattice material with highest efficiency ever observed
  - Spun off from RTI in 2004

- Thermoelectric technology converts heat into electricity, or acts as a solid state heat pump to rapidly cool or heat surfaces

- Meets need in advanced electronics for “hot spot” cooling; is an emerging green technology for recovery of waste heat to produce power and improve energy efficiency

- Over $27M USD raised in venture capital in two rounds

- Manufacturing and Engineering moved out of RTI to create the company; basic materials R&D remained at RTI.
University (non-RTI) Case Study: CREE Inc.

• Technology:
  – SiC and other wide band gap semiconductors for solid-state lighting and other applications

• Founded in 1987 by students and a post doc from North Carolina State University

• Obtained exclusive, worldwide rights to the relevant IP and limited access to university labs in exchange for funding the patent costs and providing a 5% stake in Cree to NC State

• Initially funded by $1.2M of private equity capital. All subsequent funding provided by private equity.
Case Study: CREE Inc.

- $10 million IPO on NASDAQ in 1993
- Today: 3200 employees
  - $500 million annual sales
  - $2.4 billion market capitalization
Summary

► Technology-based spin-offs are hard work, but can be very rewarding for the organization on a number of levels; many of the benefits are not financial ones.

► Good processes and clear internal communication are keys to good execution and successful outcomes.

► Experience is critical; the process can be streamlined considerably when an organization has completed the process multiple times.
Creating Technology—based Spin-off Companies—David Myers

Presentation Link:

www.rti.org/technology
Questions?
Back up slides
Executing the Spin-Off

There are several critical decisions essential to a successful outcome, all of which need consideration:

- Business Strategy
- Technology Strategy and Intellectual Property rights
- Investment Strategy and Funding Methods
- Organizational Strategy-People, Place and Things
- Exit Strategy-Impact and Operational
- Collaboration Strategy
- Internal decision making process of Spin-Off
Executing the Spin-Off

A few thoughts to consider before starting out…

- **Business Strategy/Model**
  
  - Impact that the spin-off will have on the home organization (depletion of key management or technical skills)
  - Relationship between the home organization and the new entity at the outset, and after a potential sale, IPO, or bankruptcy
  - Level of cash investment to be made in the new entity
Executing the Spin-Off

Technology and IP Strategy
Think over at very beginning.....

- Typical sticking points are driven by the need for the new company to have sufficient freedom to operate, versus the parent organization desire to continue doing research

- Breadth of technology and patent coverage
  - Technology definitions
  - Market scope
  - Geographical coverage

- Rights to future inventions, improvements
- Rights for home organization to use for R&D purposes
- Consider impact future R&D programs at home organization
Executing the Spin-Off

Investment Strategy:

– Seek a strategic relationship; helps to get over the rough spots

– Will add quality to the board, better decisions
  • Relevant investment experience in the space
  • Industry knowledge and contacts

– Funding adequate for multiple funding rounds if needed
 Executing the Spin-Off

Organizational Strategy

- **Management team**
  - The right CEO is critical to execute the creation of the new company and to drive it towards success
  - Good compatibility with the home organization, potential investors, and the key technical staff is critical. This can be very difficult to achieve, but is a major success factor.

- **Transfer of critical assets**

- **Professional Staff**
Executing the Spin-Off

**Execution Strategy:**

- Manage expectations with investors, staff exiting with the company, and home organization senior management

- Keep all functional areas involved and aware of the key dates (human resources, benefits, security, ...)

4/21/2009
Collaboration Strategy-Post Spin-Off

- A comprehensive plan should be developed which sets out the timing and responsibility for specific activities after the spin-off occurs. *Anything not planned for will likely cause problems later.*

- A key point of contact should be established for both the home organization and the new company post-spin, for handling routine work and any issues which arise.

- Frequent meetings between senior executives on both sides maintains perspective, and trust.
Executing the Spin-Off

- **Internal Decision Making Process (Spin-off)**
  - A high level of experience, and empowerment, is critical for the team executing the spin-off
  - All major constituencies should be represented (R&D, legal, human resources, security, IT, finance…)
  - Team members must communicate frequently within their own chain-of-command to ensure senior executives remain informed and supportive
  - Negotiation strategy (and boundaries) has to be agreed upon in advance