

# Opportunities and Challenges of Transferring Successful R & D Products

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# Presentation Explanation

- NYSEARCH and other R & D organizations succeed at meeting R & D project goals
- Additional steps, processes, support and effort are necessary to convert successful R & D products to implemented commercial products
- Technology Transfer covers this stage BUT
  - it means different things to different people and is sometimes difficult to fully understand and master
  - It is a complex process that is dynamic in nature



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## We contend that.....

- More time, thought, energy and funding is necessary to successfully complete technology transfer
- Based on both success and failure to implement R & D products and now formal research on the topic, we can share relevant opportunities and challenges



# Challenges

- Human Nature
- Timing
- Business Influences
  - Frequent Mergers & Acquisitions
  - Complex Intellectual Property Ownership
  - Growing Reqt for Indemnification and Insurance
  - Short Product life cycles & Short term thinking
  - R & D funding with distinct end; O & M budgets with distinct beginning



# Challenges – Human Nature

- Aversion to risk
  - R & D sponsors/developers need early participation by commercializers; commercializers want to minimize risk
  - Risk takers or early adopters/users need incentives
  - Industry decision-makers resist early purchase; no pre-sales or guaranteed sales available to commercializers
- Commercial-level performance expected even for prototypes
  - First impressions are lasting; expectations must be managed!
  - Project managers need to look for and promote successes even if not meeting commercial standard



# Challenges - Timing

- Developers still going through learning curve and finding improvements while customer is assessing R & D product
- Products released too early make lasting first impressions
- Not clear where R & D cycle ends and where commercialization should begin
  - Company management and others tend to think that R & D ends with testing of first few prototypes
- Many believe that they should overlap; manufacturers typically tend to delay entry; developers want early commercial entry, researchers want to continue research; R & D managers need to drive process



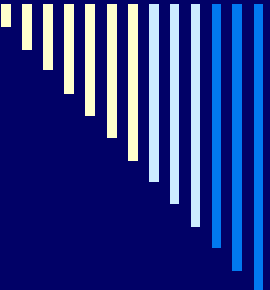
# Challenges – Business Influences

## □ Mergers & Acquisitions

- R & D champions are lost from change in personnel; changes occur within life cycle of R & D project; Needs change in middle of project

## □ Complex Intellectual Property Ownership

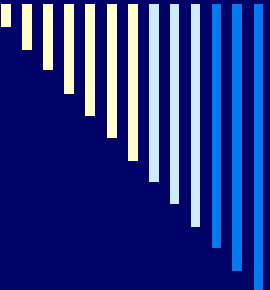
- Must manage/control transfer of trade secrets; some knowledge difficult to document or obtain
- Background vs Foreground Rights
  - Typically need to capture all Rights and provide exclusive license
  - Investors or licensors expect early returns on licensed technology



# Challenges – Business Influences (cont.)

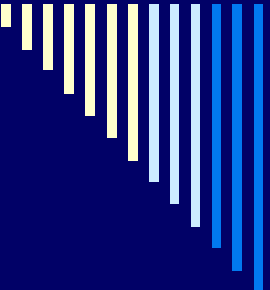
- Growing Reqt for Indemnification and Insurance
  - Everybody wants to be indemnified for implementation of R & D products; struggle exists as to who bares responsibility at what stage
  - Indemnification is only as good as insurance; insurance expectations growing in size while insurance policies are more expensive





# Challenges – Business Influences (cont.)

- Short product life cycles
  - R & D organizations want to minimize risk and maximize leverage; process needs to proceed quickly especially when trying to attract commercializers
    - Product innovations are typically met by competitive offerings in short order
    - Innovative companies must be able to turn profit quickly and justify range of new product offerings without committing to too many new products



# Challenges – Business Influences (cont.)

- R & D funding with distinct end; O & M budgets with distinct beginning
  - Commercializers and early adopters need more support for demonstrations
  - More demonstrations are needed to convince conservative industry
  - In early days of commercialization, returns can be low and additional barriers such as high price points further add to reason for low volume sales
  - Need ‘seed’ funding and creative means for exposing technology to gain experience, support and sales



# Opportunities

- Build a venture coalition within company
  - Engage personnel at all levels of company with commitment for long term communication and decisionmaking responsibilities on product
  - Use formal implementation teams for higher chance of success
  
- Manage Expectations of users
  
- Build a consistent process for standardizing the use and implementation of new technology
  
- Develop a specific deployment strategy that fits company culture



# Opportunities (cont.)

- Educate on need and solicit money to fund demonstrations
- Provide Incentives for Innovators in Industry
  - Exposure to customers for multiple markets, applications
  - Early feedback from customers
  - Potential for regulatory support
- Engage innovators/commercializers and broaden reach by developing industry practices that attract commercializers

# Case Studies

- Remote Methane Leak Detector
- Ergonomic Needle Bar





# Summary

- ❑ Formal processes, venture coalitions and seed funding are necessary to turn challenges into opportunities
- ❑ Energy Industry supports R & D but is by nature conservative; more time and energy needed on Technology Transfer – it needs to be considered an extension or a part of R & D process
- ❑ Success through the product implementation step leads to improved safety, customer satisfaction and savings
- ❑ Smart and sometimes risky choices are needed by industry, regulators and companies who commercialize technology