“Competitive Technical Intelligence”
Opportunity for Impact

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AIChE, February 21, 2011
My Background

• PhD biochemist
  – scientific method; inter-lab collaboration

• Academic career:
  – innovative teaching formats; research; “ego” politics

• Industry:
  – medical products: product development, patent assessments; X-functional collaboration; “selling”
  – pharma: drug discovery; licensing and strategy support; CTI (decision support “wherever technology is a factor”)

Assumptions about Attendees

- Technical career basics
  - Chem. Engineering; related disciplines
  - Information sourcing: technical and otherwise
  - Analytical thought process, tools
  - Objectivity
  - Identification / testing of underlying assumptions
  - Project planning, team-building, collaboration
  - Trouble-shooting /QC
  - Technology assessments (ideas; “freedom to operate;” cross-licensing, etc)
Assumptions ... (con’t)

- Business-relevant skills:
  - Subject / business area expertise
  - Cross-functional collaboration
    - Information sharing; “no surprises;” “win/win”
    - Success at “translating” complex issues between the technical and the business side
  - External context awareness:
    - competitive assessment
    - end-user constraints?
    - gov’t regulations?

Skill set for “Competitive Technical Intelligence”
Competitive Technical Intelligence
“Perspective”

Goal of this presentation:

• “Name” it

• Practice it *(part of your toolbox)*
  – External forces that could impact internal plans?
  – Underlying assumptions identified and challenged?
  – “Should” we do it?” as well as “Can” we do it?”

• Use it *(for career advantage)*
Competitive Technical Intelligence (CTI)

- What is it?
- Why should you care?
- Where can it be applied?
- What is its potential for impact?
- How can you learn more about it?
What is CTI?

“Analysis of the external environment, in the context of internal issues, for the purpose of decision support, where technology is a factor”
A CTI “Natural...”

- **Meyer Steinberg, Sr. Chem. Engineer** *(AIChE, 01/17/12)*
  - Student *(Cooper Union)*
  - Chem Eng *(Manhattan Project, Brookhaven Laboratory)*
  - Global warming activist *(CO₂ mitigation)*

- **...affected outcome of WW II:**
  - understood the technical issues
  - provided internal context for external (competitor) information; devised a technical response
  - translated, communicated complex technical information to military decision-makers *(“actionable intelligence”)* who approved his recommendation.
Scope of CTI

Technology Issues

• “Freedom to operate”
• Other solutions to same problem?
• Potential for repurposed solutions to other problems?
• Cross-licensing options? Collaborations?

Non-technical drivers or “killers”

• Regulatory
• Legislative
• Market-based competition and customer trends
Sources, Techniques

- Sources (diverse)
  - Patent databases: claims, inventors, filing strategies, assignees (sponsors)...
  - Qualitative sources: sponsor web sites; networking (conferences, discussion groups, professional societies), news services, subscription sources

- Techniques (many):
  - Benchmarking; “SWOT”
  - Strategy analysis
  - Scenario planning, early warning indicators...
Competitive Technical Intelligence (CTI)

• What is it?

• **Why should you care?**
  – Project Engineer: Right project?
  – Project Team Leader: Development strategy?
  – VP R&D: Right resources?
  – CEO/CTO: Expansion strategy?

• When should it be applied?

• How can you learn more about it?
Project Engineer: *Right project?*

- Manufacturer of airplane engines (1990s)
- Experienced **CTI analyst** hired to set up a CI/CTI operation
- Interviews R&D, Marketing staff
- Finds a “wall”...
Project Team: *Competitive strategy?*

- Novel technology, tight IP
- Management “feels secure”
- Project team sees competitors “nibbling”
- Existing development strategy linear, slow
- Need to overcome management “blindspots”
  - revisit “competitive environment”
  - reconsider development strategy
- Approach: Benchmarking
### Collection Template (Company A)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>(Corporate and R&amp;D)</td>
<td></td>
</tr>
<tr>
<td>Strategies</td>
<td>(Corporate and R&amp;D)</td>
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<tr>
<td>Product Area Goals</td>
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<tr>
<td>Franchises</td>
<td>(Presence in market)</td>
<td>(Failed products)</td>
</tr>
<tr>
<td>R&amp;D Programs</td>
<td>(Proven approaches)</td>
<td>(All high risk?)</td>
</tr>
<tr>
<td>Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- $</td>
<td>(Net income, revenues, cash)</td>
<td>(Recruiting new group?)</td>
</tr>
<tr>
<td>- People</td>
<td>(Recognized experts)</td>
<td>(Patent challenges?)</td>
</tr>
<tr>
<td>- Technology</td>
<td>(Novel, critical?)</td>
<td></td>
</tr>
<tr>
<td>- Patents</td>
<td>(Strong position)</td>
<td></td>
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<tr>
<td>- Alliances</td>
<td>(Complementary)</td>
<td>(“Seeking partner”?)</td>
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</tbody>
</table>
Strategic Position of Competitors

No. Research Approaches

Breadth of Applications

A
B
C
D
E
F
VP R&D: *Right resources?*

- New product area, to industry / company
- Little published information
- Internal project meeting, novel discovery reported *(old molecule, new use)*
- Sr. VP wonders aloud:
  
  “Have x, y, z competitors found this link?”

- Why does he care?
- **What does he REALLY need to know?**
C(T)I Practitioner...

• “What action am I supporting?”
  – If competitive threat is real, he needs more resources

• Is competitive threat real?
  – Call competitors? NO
  – Check technical literature? NO
  – Need “indicators of competitor action” that can be searched

• “How did we discover this link?”
• “Who else has same elements in place?”
C(T) I Project: “Indicator” approach

Elements?
• Disease focus?
• “Old molecule” in house?
• Automated test for new activity?
• Tactic to put in-house compounds through automated test?

Sources
• Newspapers, trade press, analyst reports
• Patents (US, foreign)
• Conferences; company presentations
• Networking, company presentations
Deliverable: “Assume we have competition”

<table>
<thead>
<tr>
<th>Company</th>
<th>Disease Focus</th>
<th>Patents*</th>
<th>Automated Test</th>
<th>Old Cpds thru Test?</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>+</td>
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<td>B</td>
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</table>

*80 companies had relevant “old molecule” patents
CTI Follow Up

Action: Sr. VP increased resources

Next steps:
- Tracked key competitors re: new application
- Informed employees about information needs, ethics
- Trained employees about need for confidentiality
Follow-up (con’t)

Assessment presented to management
  – project heavily resourced
  – tracking continues (1º, 2º sources)

Competitor E publishes “linkage”
  – “exception that proves the rule”

CTI predicts competitor B “close to clinic”*

Competitor B announces start of clinical trial

Own clinical trial begins

* Sr. VP does not believe the threat
CTO/CEO: Expansion strategy

- **CEO:** Deliver value
- **Executive Team:** Set goals, approve strategies, oversees implementation
- **Decision-support functions:**
  - R & D (technical, project focus)
  - Marketing & Sales (product, brand focus)
  - Business Development (pipeline, franchise focus)
  - Finance (ROI; bottom line; stock market...)
  - CI/CTI: External analysis / competitive focus
CEO/CTO: Expansion strategy?

- Bioplastics manufacturer wants to enter new geographical market
- Complex process requiring coordinated inputs and analyses from diverse functions
  - Regulatory climate?
  - Market readiness? Competitive issues?
  - Technologies / potential partners?
  - Raw material availability? options? costs?
  - Processing facilities and associated costs?...etc
CEO/CTO: Expansion strategy

- CTI has cross-functional perspective needed to plan analysis project.
  - Step 1: Interview the client
    - determine business goals, assumptions (SWOTs)
    - challenge/test those assumption
  - Step 2: Develop KITs and KIQs
- Engage needed peer functions.
- Get to work.
Competitive Technical Intelligence (CTI)

- What is it?
- Why should you care?
  - When should it be applied?
- How can you learn more about it?
C(T)I is needed when:

- Cross-functional insights are required
- Decision has $$$ impact
- Decision involves multiple functions:
  - More than one VP
  - *Client: “decision makers and those who support them”*
Competitive Technical Intelligence (CTI)

- What is it?
- Why should you care?
- When should it be applied?
- How can you learn more about it?
Resources (1)

CTI-Specific:


CTI-Specific:


Resources (3)

CI-General

- Strategic and Competitive Intelligence Professionals (SCIP): [www.scip.org](http://www.scip.org)

[NOTE: Historically important; bridged “intelligence” from government/military to commercial sector; easy, enjoyable read]
Questions?