"Competitive Technical Intelligence"
Opportunity for Impact

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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?
- Were can it be applied?
- What is it's 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 *(CO_2 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”…

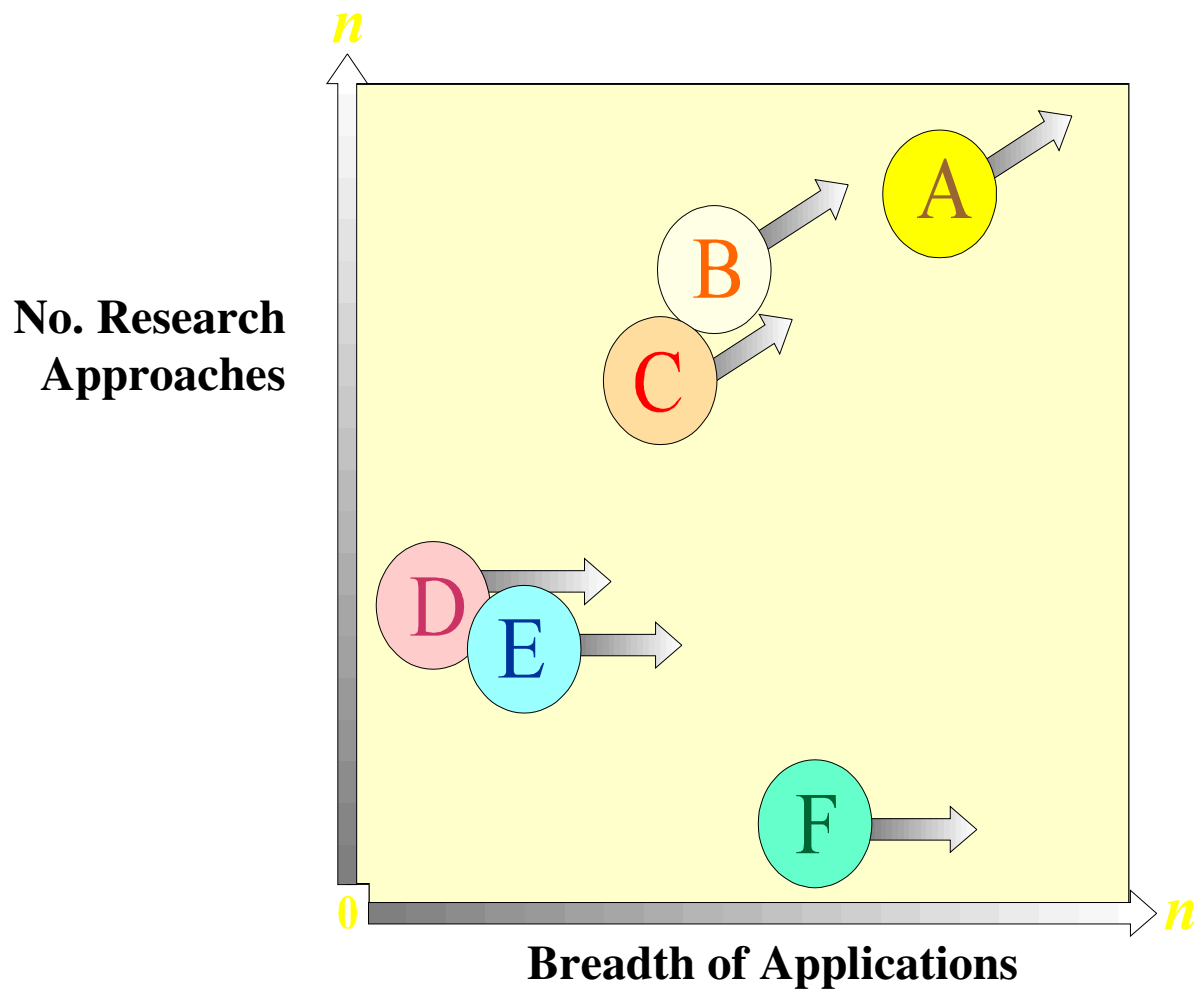
Project Team: *Competitive strategy?*

- 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)

Criteria	Strengths	Weaknesses
Goals	(Corporate and R&D)	
Strategies	(Corporate and R&D)	
Product Area Goals		
Franchises	(Presence in market)	(Failed products)
R&D Programs	(Proven approaches)	(All high risk?)
Resources - $ - People - Technology - Patents - Alliances	 (Net income, revenues, cash) (Recognized experts) (Novel, critical?) (Strong position) (Complementary)	 (Recruiting new group?) (Patent challenges?) (“Seeking partner”?)

Strategic Position of Competitors



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”

Company	Disease Focus	Patents*	Automated Test	Old Cpds thru Test?
A	+	+	+	+
B	+	+	?	+
C	+	+	+	?
D	+	+	+	?
“E”	?	+	+	+

**80 companies had relevant “old molecule” patents*

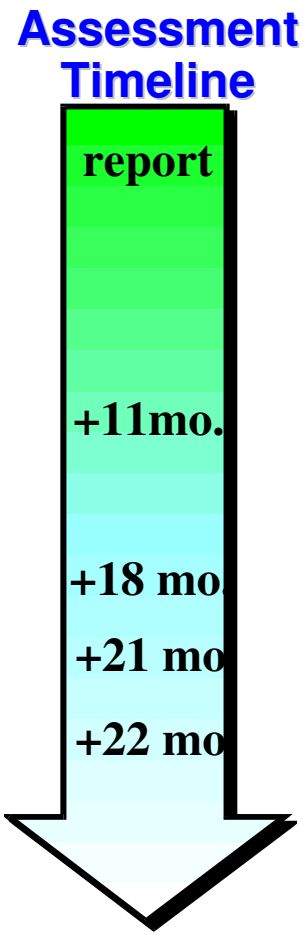
CTI Follow Up

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 (1°, 2° 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

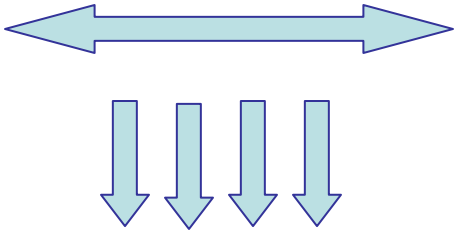
- CTI has cross-functional perspective needed to plan analysis project.
  - Step 1: Interview the client
    - determine business goals, assumptions (SWOTs)
    - challenge/test those assumption
  - Step 2: Develop KITs and KIQs
- Engage needed peer functions.
- Get to work.

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:

- Competitive Technical Intelligence (2009). Eds: W. B. Ashton, B. Hohhof (Competitive Intelligence Fdn, Alexandria, VA; 398 pp)
- Competitive Technical Intelligence: A Guide to Design, Analysis and Action (1999). M. M. Coburn (Amer. Chem. Soc., Washington, DC and Oxford Univ. Press, NY, NY; 148 pp)
- Keeping Abreast of Science and Technology: Technical Intelligence for Business (1997). Eds: W. B. Ashton, R. A. Klavans (Batelle Press, Columbus OH; 560 pp)

Resources (2)

CTI-Specific:

- Ashton, B (2007):"New SCIP Community of Practice: Competitive Technical Intelligence" In *Competitive Intelligence Magazine,* vol 10 no. 4, July-August, pp15-17 (see www.scip.org).
- Matteo, M. R. (2005)."Benchmarking for Insights on R&D Productivity" In *Competitive Intelligence Magazine,* vol 8
  no. 3, May-June, pp20-26 (see www.scip.org).

Resources (3)

CI-General

- Strategic and Competitive Intelligence Professionals (SCIP): www.scip.org
- Competitive Intelligence Advantage: How to minimize risk, avoid surprises and grow your business in a changing world (2009). S. Sharp (John Wiley & Sons, Hoboken, NJ; 290 pp)
- Starting a Competitive Intelligence Function (2008). Eds: K. Sawka, B. Hohhof (Competitive Intelligence Fdn, Alexandria, VA, 276 pp)
- Strategic and Competitive Analysis: Methods and techniques for analyzing business competition (2003). C. S. Fleisher, B. E. Bensoussan (Prentice Hall, Upper Saddle River, NJ, 457 pp)
- Real World Intelligence: Organized information for executives (1987). H. E. Meyer (Weidenfeld and Nicolson, NY, NY 102 pp)

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

Questions?