Creating New Wealth by Improving the Fuzzy Front End of the Innovation Engine

NSF Grant submitted to Institute for Organizational Change Directorate
August 2003 – August 2006

Academic Partners

Industry Partners

... A partnership of Academia and Industry
NSF Partnerships for Innovation Grant

*Objective*
- To discover, optimize and disseminate effective practices in the FFE so that more highly profitable and commercially successful products may be feed into the NPD portion of the innovation engine

*Targeted Segments*
- Chemicals, Food and Beverage, Medical Devices and Petroleum

*Funding Requested (Beginning August 15, 2003):*
- Total: $355,080 (3 year duration)
  - NSF $295,080 Partners: $60,000

*Academic Partners:*
- Harvard: D. Leonard (Senior Personnel - Consultant)
- McMaster University: Elko Kleinschmidt (Co-PI)
- MIT: E. VonHippel (Senior Personnel - Consultant)
- Stevens: P. Koen (PI)

*Industry Partners:*
- Cabot Corporation, Ethicon, ExxonMobil, LORD Corporation, and Rich Products
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I. Understanding the Fuzzy Front End Using the NCD Model

**Fuzzy Front End Elements**
- Understand the key tools, methodologies and characteristics of the fuzzy front end elements using the NCD theoretical construct in some additional companies who were not in the original work
- Perform case studies on projects in areas of high technology and market novelty
  - Breakthrough Projects (10 cases)
  - Platform Projects (10 cases)
- Field Interviews of FFE
  - 5 companies in targeted segments (> $2 billion)

II. Survey Development

- Develop validated survey which includes outcome measures for the FEI and each of the elements
- Validate survey with 10 IRI companies and 10 academics

III. Determine Effective Practices - Large Sample Survey

- Administer Survey to at least 100 companies to be filled out by at least 5 people in SBU including CEO, CTO and 3 program directors
- Target a return greater than 80%
- Analyze the results
- Determine FEI metrics and practices which relate to the overall outcome of the NPD process
- Identify best practice companies

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2003 2004 2005
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IV. Improving on Effective Practices (i.e. Optimization)

- Visit 10-12 companies who are in the top 20% and compare their practices to those in the 50% octal.

V. Develop Assessment Tool*

- Develop an assessment tool which can compare FEI against the 20% companies

VI. Implement practices and measure outcomes at Partner companies

- Apply FFE assessment tool at partner companies
- Evaluate results of assessment tool and suggest areas for improvement
- Reapply assessment tool and FFE metrics over a 3-5 year period to determine overall benefit

2005

2006

* The assessment tool would be a questionnaire based internal audit of a business’s FFE practices, performance, problems and related issues. The tool would compare an individual company’s approach and results against the top 20 percent performers. Over 100 characteristics of the company’s FFE and its performance would be measured. The tool would highlight the strength of the organization, pinpoint its weaknesses, and serve as a base to develop better approaches for the future.
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VII. Disseminate Learning

- Develop University Training Packages for both short and full semester courses
- Develop cases which can be used to demonstrate the principles used in the FFE
- Develop a Web Enabled Site permitting universities and technical schools to get access to learning
- Hold practitioner sessions with well known NPD associations (ex. IRI and PDMA)
- Publish results in leading journals in innovation

2006