



# Center for Paper Business and Industry Studies

Annual Report to the  
Alfred P. Sloan Foundation

October 16, 2005

## I. NARRATIVE: MOST SIGNIFICANT IMPACTS

Founded in Fall 2000 and having received three-year renewal funding in Fall 2003, the Center for Paper Business and Industry Studies (CPBIS) is completing its fourth year operation. During the four year period, the single greatest achievement of CPBIS has been its *broad-based* engagement with the pulp and paper industry in particular and more generally the forest products industry. During the past five years, CPBIS continued its efforts to develop an infrastructure that has actively supported a diverse research portfolio, academic and distance learning programs, and industry connectivity at various levels. Included among these initiatives are:

- Creation of a Board of Executives to advise and assist CPBIS in its efforts to develop and implement a sustainability plan that will ensure its long term viability;
- A restructured Industry Advisory Board (IAB), with industry executives as Chair and Co-Chair, the purpose of which is to strengthen industry participation and engagement in CPBIS activities;
- A research portfolio that currently includes 4 CPBIS funded projects: 2 on innovation, 1 on pricing dynamics, and 1 on the implications of digital printers for the industry;
- Continuing discussions with the Agenda 2020 committee of the American Forest and Paper Association and the U.S. Department of Energy, the Institute of Paper Science and Technology (IPST) and others on the implications of the bio-refinery concept for the pulp and paper industry;
- PhDs awarded to two CPBIS Fellows, Center-funded students whose dissertation research focused on pulp and paper industry issues;
- Academic and industry conference presentations of CPBIS funded project results.
- Three collaborative initiatives with other Sloan-funded industry centers (a co-funded project with the Printing Center; research-related workshop with the Electricity Center; and work with other Sloan Centers on Center sustainability);
- A management workshop, "Management Development for Enhanced Performance", which is enjoying increasing enrollments;
- In collaboration with the Paper Industry Management Association (PIMA), ten management development Webcast classes with over 130 locations participating
- An increasing CPBIS web presence that highlights the Center's current research projects, industry reports and news, research bibliography, and a regularly updated database of pulp and paper manufacturing facilities, 'Mills on Line,' which recently surpassed the 10,000 hit mark;

CPBIS continues to garner high marks from industry for its connectivity and industry engagement. In this regard, the Center continues to have a presence at Industry Conferences, including PIMA and the Technical Association of the Pulp and Paper Industry (TAPPI), at which CPBIS personnel and researchers host panel sessions and present their work. In addition, hard work this past year aimed at increasing enrollments in the week-long 'Management Development for Enhanced Performance' paid dividends; the May 2005 offering had 21 attendees, including two students from the University of Maine, funded by the Maine Pulp and Paper Foundation, and two IPST students funded through an endowment that will continue to provide funding for IPST attendees or other Pulp and Paper students..

The Center's research portfolio is continuing to develop at a steady pace. There is a collective sense among the management team that the Center now has the opportunity to more fully exploit its industry connectivity and outreach associations to strengthen its research portfolio through more targeted research projects that will deepen our understanding of the industry and lead to published papers in high quality academic outlets.

Notwithstanding the Center's impatience for strengthening its research output, CPBIS' research accomplishments to date are bearing fruit. As an example, Dr. Hannes Toivanen, a CPBIS Fellow who received his PhD (School of History, Technology, and Society in the Ivan Allen College) in August

2004, accepted a position at Lappeenranta University of Technology (LUT), Finland, where he initiated a research project to explore the most important global challenges facing the industry. Funded by the national government and several forest products/paper companies (e.g. UPM-Kymmene, StoraEnso), one part of this project is to develop a global network of top researchers to actively cooperate on research projects relevant to the industry. Professor Jaana Sandstrom and Kalevi Kyiaheiko visited the Georgia Institute of Technology (GIT) in August to discuss this project and how CPBIS might participate. The first workshop, to be held November 14, 2005 at LUT, will include researchers from Finland, South America, and North America. Professors Pat McCarthy (Director, CPBIS) and Steve Usselman (Associate Director, Research, CPBIS) have been invited to give presentations on aspects of the pulp and paper industry in North America. This workshop is expected to be the first of several workshops that will lead to the development of a global network of researchers, spur cross-country collaborative research projects, and provide greater insights on how the domestic industry can best meet the global challenges it faces. An important side note is that Dr. Toivanen has recently accepted a position as Senior Researcher, Technology Department, Division for Research and Foresight Studies with the Ministry of Trade and Industry in Finland.

A second illustration of collaborative CPBIS efforts and industry impact was this year's Techno-Business Forum, held on September 19<sup>th</sup> and 20<sup>th</sup> in Atlanta, Georgia at the Georgia Tech Hotel and Conference Center. The forum was well received by over 125 by leaders from business, academic, and governmental organizations who were in attendance. The event was developed, led, and hosted by the IPST and CPBIS at the Georgia Institute of Technology and co-sponsored by TAPPI. The 2005 Forum program was designed around a theme that embraces Open Innovation and Enhanced Platforms for Innovation and how they collectively relate to Enterprise Transformation. Included among the 'conference takeaways' was the realization: that knowledge sharing is fundamental to collaborative research and building partnerships and that collaborators must share control and credit as well as risks and rewards. Two research foci that illustrate these issues for the pulp and paper industry are nanotechnology and biorefineries.

A highlight of the meeting was the provocative discussion by Lester Lave, Director of the Sloan Electricity Center at Carnegie Mellon. In his comments, Dr. Lave noted that he had seen this scenario in other industries and that if the paper industry didn't reevaluate itself soon, the industry would disappear. He said that the industry should stop making paper and use the renewable forest asset for higher profit products like power. Mr. Ben Thorp, paper industry executive and Center for Technology Transfer (CTT) Advisor, agreed and emphasizing to the audience that paper companies were not in the business of "making paper ...[but] in the business of making money". Whether one agrees or not with these sentiments, they provided fodder for a fruitful discussion of the future of the industry. The Forum received wide support from profit and non-profit organizations alike, including Albany International, the Alfred P. Sloan Foundation, Buckman Labs, Ecole Polytechnique, Georgia Tech, Hercules, Imerys, Jacobs Engineering, Metso Paper, NC State University Pulp and Paper Foundation, Phillip Townsend & Associates, Syracuse Pulp and Paper Foundation, TAPPI, and the University of Maine Pulp & Paper Foundation.

## **II. DATA**

### *A. ACADEMIC*

#### 1. FACULTY

a. Names of those currently involved in Center programs this academic year (and where they are located, if at a different university from the Center)

| <b>Last Name</b> | <b>First Name</b> | <b>University</b>  |
|------------------|-------------------|--|
| Farmer           | Michael           | Texas Tech   |
| Ghosal           | Vivek             | GIT  |
| Kilic            | Rehim             | GIT  |
| Li               | Haizheng          | GIT  |
| McCarthy         | Patrick           | GIT  |
| Nair-Reichert    | Usha              | GIT  |
| Peter            | Gary              | University of Florida  |
| Sampat           | Bhaven            | Columbia University  |
| Singhal          | Vinod             | GIT  |
| Sinquefield      | Scott             | GIT  |
| Song             | Minjae            | GIT  |
| Stuart           | Paul              | École Polytechnic de Montreal  |
| Usselman         | Steven            | GIT  |
| White            | David             | IPST   |
| Toivanen         | Hannes            | Lappeenranta University of Technology;<br>Finland Ministry of Trade and Industry |

b. Other faculty who have been involved in the past but are not now (If names are unavailable, please estimate number.)

| <b>Last Name</b> | <b>First Name</b> | <b>University</b> | <b>Academic<br/>Years Involved</b> |
|------------------|-------------------|-------------------|------------------------------------|
| Banerjee         | Shomu             | GIT               | AY01-03                            |
| Bennett          | Nate              | GIT               | AY03-05                            |
| Bras             | Bert              | GIT               | AY01-05                            |
| Carmichael       | Carol             | GIT               | AY01-05                            |
| Challagalla      | Goutam            | GIT               | AY02-04                            |
| Chang            | Yih-Long          | GIT               | AY01-05                            |
| Duncan           | Roderick          | GIT               | AY01-03                            |
| Fedor            | Donald            | GIT               | AY00-01                            |
| Gaimon           | Cheryl            | GIT               | AY01-05                            |
| Ghosh            | Soumen            | GIT               | AY01-05                            |
| Giebelhaus       | August            | GIT               | AY01-05                            |
| Goettschalckx    | Marc              | GIT               | AY02-04                            |
| Herold           | David             | GIT               | AY00-01                            |
| Karrila          | Seppo             | IPST              | AY03-04                            |
| Liker            | Jeff              | Michigan          | AY03-04                            |
| Lu               | Jye-Chyi          | GIT               | AY01-05                            |
| McDonough        | Thomas            | IPST              | AY00-03                            |
| McGinnis         | Leon              | GIT               | AY01-04                            |
| Nanko            | Hiroki            | IPST              | AY02-05                            |
| Newcomb          | P.J.              | GIT               | AY01-03                            |
| Newman           | David             | GIT               | AY01-03                            |
| Parsons          | Charles           | GIT               | AY03-05                            |
| Ragauskas        | Art               | IPST              | AY01-02                            |

|        |         |                         |         |
|--------|---------|-------------------------|---------|
| Realff | Matthew | GIT                     | AY02-04 |
| Vallas | Steve   | George Mason University | AY03-05 |
| Zhou   | Chen    | GIT                     | AY01-03 |

## 2. GRADUATE STUDENTS

a. Names of those currently involved in Center programs this academic year

| <u>Last Name</u> | <u>First Name</u> | <u>University</u> |
|------------------|-------------------|-------------------|
| Chica            | Jaime             | GIT               |
| Lei              | Lei               | GIT               |
| Mabe             | Kevin             | GIT               |
| Maharaj          | Ashok             | GIT               |
| Naidu            | Rithika           | GIT               |
| Singh            | Rajan             | IPST              |
| Taylor           | Kendra            | IPST              |
| Unger            | Phil              | GIT               |
| Urmanbetova      | Aselia            | GIT               |
| Wang             | Gewei             | GIT               |

b. Cumulative number of graduate students (approximate) who have been involved in Center programs over the years:

Sixty-five graduate students (PhDs and Masters) have participated in CPBIS programs since the Center's inception.

## 3. PhD's

a. Names of PhD's graduated last academic year (2004-2005), location of jobs, and email addresses (if available).

Taylor, Kendra. "Optimal Strategies in Sequential Online B2B Auctions", School of Industrial and Systems Engineering, Georgia Institute of Technology. 2005.

NOTE: If there are cases in which a student worked in some capacity on an industry studies project but did not subsequently write his or her PhD thesis on an industry studies topic, please identify such students with an "\*" or other notation.

b. Names of PhD's graduated in total between the start of Sloan funding and last year, and updated career info (tenure? promotions? relocations?) if available.

NOTE: If there are cases in which a student worked in some capacity on an industry studies project but did not subsequently write his or her PhD thesis on an industry studies topic, please identify such students with an "\*" or other notation.

| Name                               | School/<br>College<br>Institution             | Thesis Title  | Current E-mail<br>Address  | Job Placement  |
|------------------------------------|---|---|--|--|
| Charoensiriwath,<br>Chayakrit      | ISyE, GIT                                     | Dynamic Learning in Supply Chain with Repeated Transactions and Service   | <a href="mailto:Chayakrite@yahoo.com">Chayakrite@yahoo.com</a>     | Government of Thailand   |
| Kim, Hyoungtae*                    | ISyE, GIT                                     | Reliability Modeling with Load-Shared Data and Supply Chain Contract Decisions under Uncertain Logistics Operations | <a href="mailto:htkim@isye.gatech.edu">htkim@isye.gatech.edu</a>   | GaTech Postdoctoral Fellow   |
| Santoso, Tjendera                  | ISyE, GIT                                     | A Comprehensive Model and Efficient Solution Algorithm for the Design of Global Supply Chains Under Uncertainty     | NA   | Parahyangan Catholic University, Indonesia                                       |
| Swafford, Patty*                   | Management, GIT                               | Theoretical Development and Empirical Investigation of Supply Chain Agility   | <a href="mailto:swafford@uta.edu">swafford@uta.edu</a>             | University of Texas, Arlington   |
| Taylor, Kendra<br>(CPBIS Fellow)   | ISyE, GIT                                     | Sequential Auction Design and Participant Behavior  | <a href="mailto:kendra12@bellsouth.net">kendra12@bellsouth.net</a> | Booz Allen Hamilton  |
| Toivanen, Hannes<br>(CPBIS Fellow) | History,<br>Technology,<br>and Society<br>GIT | Learning and Corporate Strategy: The Dynamic Evolution of the North American Pulp and Paper Industry, 1860-1960     | <a href="mailto:hannes.toivanen@lut.fi">hannes.toivanen@lut.fi</a> | Lappeenranta University of Technology;<br>Finland Ministry of Trade and Industry |

#### 4. Numbers of workshops, seminars, conferences, or other campus events held this past year

Distinguished Lecture Speakers – 3

Research Seminar – 1

Sustainability Conference, January 11-12, 2005

Techno-Business Forum (co-hosted with IPST, TAPPI), September 19-20, 2005

Industry Advisory Board Meetings – 3

Management Workshop – 2

Panel Session, “Mergers and Vertical Integration in the Pulp and Paper Industry”, International Industrial Organization Conference (GIT)

Board of Executives Meeting – 2 (June, 25, Nashville, TN; Sept. 28, Atlanta, GA)

Noted Examples:

Dr. Erica Groshen (Assistant Vice President, Research and Market Analysis Group, Federal Reserve Bank of New York), “Lessons for the Future from the Jobless Recovery”, January 28, 2005

George Weyerhaeuser (Senior Vice President, Technology, Weyerhaeuser) “Technology Deployment in the Forest Products Industry”, February 25, 2005

5. Number of academic papers and books published

(NOTE: please do not count presentations at society meetings unless papers were published in a special volume, and do not include publications in trade journals, which are discussed below in item B-4.)

Number of papers published in peer reviewed journals – 1

Number of papers under review in peer reviewed journals – 11

Noted Publications

Li, H., Luo, J., and McCarthy, P. “Economic Transition and Demand Pattern: Evidence from China’s Pulp and Paperboard Industry”, *China Economic Review* (forthcoming).

6. Awards or honors received this past year by people associated with your Center

| Date | Recipients | Title of Award | Grantor |
|------|------------|----------------|---------|
|------|------------|----------------|---------|

In addition, three PhD students have received CPBIS Dissertation Awards in 2003 and 2004. See Section I for details.

7. Number of new courses or curricula developed, based on the Center's work

a. In the past year

Distance Learning –

September 2004 – November 2004: 6 Webcast classes on “Six Sigma” – with 87 locations and over 400 individuals attending one or more classes

March 2005 – May 2005: 4 Webcast classes on “Efficient and Reliable Management of Press Section Operations” – 51 locations and over 200 individuals attending one or more classes

September 21, 2005 – “Lean Manufacturing a Framework for a 5S Kazan Program” – with 22 locations and over 300 individuals attending the class

October 5, 2005 – “Five S ‘Organized Sort and Set in Order to Improve Communications” – With 25 locations and over 320 individuals attending

CPBIS Management Development Program –offered twice during the last year

October 25-29, 2004 –enrolled 10 managers from 6 different paper and pulp companies

May 9-13, 2005 – enrolled 17 managers from 8 different companies and 4 students from two different universities.

Evaluation –most of the evaluations above 4 on a 5 point scale, where 5 represents excellent or extremely satisfied. Many of the participants indicated that they will recommend this course to their colleagues.

b. From start of Sloan funding (including this year)

Distance Learning – 25 Management skill building Webcast classes  
Management Workshop – 4 five day workshops  
Academic course (undergraduate) – 1

*B. INDUSTRY*

1. Approximate number of visits to companies in the past year.

25

2. Approximate number of companies supplying data in the past year.

12

| Number | Company Name         | Number | Company Name        |
|--------|----------------------|--------|---------------------|
| 1      | Albany International | 7      | International Paper |
| 2      | ANC NewsPrint        | 8      | MeadWestveco        |
| 3      | Bowater              | 9      | Pratt Industries    |
| 4      | ForsetWeb            | 10     | Tembec, Canada      |
| 5      | Fisher International | 11     | Temple-Inland       |
| 6      | Georgia Pacific      | 12     | Weyerhaeuser        |

3. Numbers of presentations to industry associations or groups.

14

4. Number of articles in industry trade journals

3

*C. GOVERNMENT*

1. Number of presentations or testimony given to government agencies or committees in the past year

(list names of agencies or committees):

15

| Number | Names of Government Agencies/Committees |
|--------|---|
| 1      | Agenda 2020 (twice)                     |
| 2      | DOE Review Committee on BLGCC           |
| 3      | Georgia Water Managers                  |
| 4      | International Recovery Conference       |
| 5      | IPST Speaker Series                     |
| 6      | National Science Foundation             |
| 7      | US Forest Service                       |

2. Approximate number of requests for advice or assistance from government organizations in the past year:

1 for biotechnology project  
6-8 from for black liquor gasification project

*D. MEDIA COVERAGE*

1. Number of special articles, features, or op-eds about the Center's work appearing in the news media in the past year:

2

2. Approximate number of times people from the Center were quoted by the media in the past year:

13

3. Approximate number of press inquiries in the past year

20 - 25

*E. FUNDING*

1. On a per annum basis, approximately how much money did the Center receive in the past year from:

a. Industry (total amount from all sources)

Techno-Business Forum \$37,500 in support of the Forum

b. Government grants (amount per annum from each source)

\$0

c. Other sources (amount per annum from each source, excluding the Sloan Foundation)

Webcast Platform Partners

\$17,500 – Webcast Receivables from PIMA

\$10,000 – Webcast Platform Contribution, NPTA

Management Development Course \$51,500 – course revenues

Management Development Education \$17,500 – income from IPST endowment to support management education

In-Kind Industry Contributions – \$349,500

2. Approximate funding received from INDUSTRY sources, in total, since the start of Sloan.

(You may include in-kind funding, if applicable.)

Cash \$2,082,000

In-Kind Industry \$120,000

3. Approximate funding has provided by government, university and other NON-INDUSTRY sources,  
since the start of Sloan support (excluding the Sloan Foundation)

|   |             |
|---|-------------|
| Associations/Academic Institutions  | \$160,000   |
| PIMA Alliance   | \$125,000   |
| Non-industry platform partners  | \$35,000    |
| In-Kind Associations, Trade Journals, Academic<br>Institutions and other businesses | \$2,558,400 |
| IPST In-Kind  | \$1,300,000 |
| GIT (tuition remission)   | \$374,400   |
| GIT (indirect costs)  | \$884,000   |