Enhancing Senior Design Courses with an Entrepreneurial Component
A proposal submitted for the Engineering Entrepreneurship Curriculum Development Grant

1. Introduction

Entrepreneurs use financial and business acumen to convert innovation into economic goods. A key skill required by entrepreneurs is the ability to create sound business plans which help transform these innovations into economic goods. In order to train Purdue Industrial Engineering (IE) students to become entrepreneurs, we propose the inclusion of an entrepreneurship component in IE 431, the senior design course.

As part of the senior design course, students work with client companies to tackle real-world problems that the company faces. As part of this process, students use the knowledge they have acquired over the four years to propose innovative solutions to the company's problem. When the project is complete, students are required to write a final report detailing their experiences and budget. They then have to present their work, to both faculty, and the client company. The senior design course therefore trains students to think and act like entrepreneurs.

2. Enhancing the Senior Design Course with a Business Plan requirement

To further enhance the entrepreneurial nature of the senior design course, we propose the inclusion of a business plan requirement in future senior design courses. Currently, teams develop innovative solutions and detail the budget for the effort put in to solving the problem. A critical area that is not addressed is the implementation of these solutions, which is a key step in transforming innovation into economic goods. To help students develop into entrepreneurs, we will require that teams include a business plan in their final reports. Specifically, students will have to step in to the roles of entrepreneurs presenting a business idea to a potential client and create a detailed business plan discussing the implementation of their solution and transforming an idea into reality. These detailed business plans will form a vital part of their final report. Teams will be required to present their business plans to faculty in charge of their projects, and more importantly, to their client companies.

The business plans teams draft up will be evaluated by the client company themselves. Once the teams have made presentations and submitted their plans to the client, the client will be asked to submit qualitative feedback on the business plan drafted by the team they have been working with. The feedback will be obtained by way of a survey which will be sent to the client once the team has finished work on their project and made all necessary presentations and recommendations. The survey will focus on how professional, complete and practical the business plans are.

The student's knowledge on creating business plans will be tested by way of a survey at the end of the project. After making their final presentations to faculty, students are required to complete survey forms detailing their experiences on the project. We propose adding some test questions based on creating business plans to the survey that students will have to answer. The student's performance on these questions will not be evaluated. Instead, their responses will allow faculty to assess the knowledge that students should have gained over the semester related to creating business plans. We will then have quantitative data at the end of every academic year, describing

how well students assimilated knowledge related to business plans, and giving us feedback on how better to help students become entrepreneurs.

To help students prepare business plans, learning material will be made available to them on 'Confluence', a web-based portal. Currently, students enrolled in the senior design course store project-related files on 'Confluence'. This portal also allows for sharing of information easily between different groups. The faculty and TAs can post material related to creating business plans on 'Confluence', which students can then access and learn from in order to draft their own business plans. Furthermore, the structure of 'Confluence' allows students to share useful information with each other. Thus, students can share amongst themselves information related to entrepreneurship and business plans.

Students already gain entrepreneurial skills as part of the senior design course. Faced with real-world problems they develop innovative solution methods. Requiring them to draft detailed business plans will ensure that they think beyond just solving the problem innovatively, about how to implement their solution methods. The ideas proposed above, while discussed with respect to Industrial Engineering, can easily be ported to senior design courses in other engineering disciplines.

3. Learning Objectives

Primarily, students will learn how to create detailed business plans for their projects. At a deeper level, however, students will learn to think about not just solving the problem at hand, but how to implement their solution methods. In the process, they might discover that their proposed solution may not be feasible, and will therefore have to think of a solution that is practical, implementable and feasible. Thus, when faced with a problem, they will not only think of how solve it, but to solve it in a feasible and implementable manner.

4. Description of Course Material

The course material associated with this proposal is the material that will be posted on the web-portal 'Confluence'. The material will discuss in detail the creation of the business plans. A variety of online resources exist as well to help students achieve this objective. Links to these resources will be posted on 'Confluence'. We anticipate working closely with the Burton D. Morgan Center for Entrepreneurship in order to obtain relevant and useful material to upload on to 'Confluence'.

5. Prior Experience

The senior design course, to date, has not included a business plan requirement. Till now, students were only required to provide a detailed budget of their efforts. The inclusion of a business plan requirement, however, is the next step from requiring a detailed budget.

Creating test questions as part of the senior design survey is also a new requirement. However, an initiative is underway in the School of Industrial Engineering to standardize course-level outcomes assessment. Drs Arunachalam Chockalingam and Steven Landry were awarded a 2010 Learning Outcome Assessment Grant to develop these standardized procedures. One of these procedures involves developing test questions to be added on surveys for individual courses, to test students' assimilation of material, similar to the survey method proposed in Section 2.

6. Disseminating the Proposed Ideas

The proposed ideas will first be disseminated at the E2020 workshop. Follow-up presentations at engineering seminars around Purdue will help spread these ideas further. We also anticipate submitting a proposal to the 2011 Engineer of 2020 Seed Grant program, to help develop these ideas further, and spread them to other engineering disciplines.

7. Work Plan and Timeline

The majority of work will be carried out over the summer of 2010. We plan on acquiring the material necessary to be uploaded on to 'Confluence' and developing test questions to be used on senior design surveys by the end of the summer. The idea will be implemented in Spring 2011, when students enroll and begin work on their senior design projects. By the end of Spring 2011, we anticipate getting feedback from client companies on business plans drafted by teams they were working with, as well as quantitative feedback from the survey that students will have completed at the end of their projects.

8. Deliverables for the E2020 Workshop

At the E2020 workshop, we plan to have

   a. A report detailing our proposed idea
   b. A description of the material we will be uploading on to 'Confluence'
   c. Test questions that will be added on the survey
   d. A presentation describing our work and future plans

Additional details

Departments involved:
1. School of Industrial Engineering
2. Burton D. Morgan Center for Entrepreneurship

Faculty involved:
1. Arunachalam Chockalingam (Visiting Assistant Professor, IE)
2. Mark Lehto (Professor, IE)
   Brief bio for Mark Lehto:

Dr. Lehto currently teaches two undergraduate courses (IE 486 and IE 431) and three graduate courses (IE 546, IE 558, and IE 656). IE 486 – Work Analysis and Design II is a required course for Industrial Engineering students first taught by Dr. Lehto in 1990. Over the years, Dr. Lehto has developed a wide range of materials for the class, including laboratory exercises, projects, and a recently completed textbook entitled "*An Introduction to Human Factors and Ergonomics for Engineers,*" which has been adopted for courses at Purdue and other universities such as Pennsylvania State and Tsinghua University.

 IE 431 – Industrial Engineering Design is a required, project-oriented, course in which teams of 4 to 5 students are asked to solve real problems faced by companies or other organizations, normally located within the state of Indiana. Students are graded, not only on their results, but on how well they manage their project, and satisfy the client. This course has been very well received by both students and the participating organizations. Other recognition includes Dr. Lehto being invited to be a member of the organizing committee of the bi-annual *National Capstone Design Conference* for both 2008 and 2010. One of the major tasks, associated with teaching the class, is to find 20 to 30 companies interested in participating each semester. Dr. Lehto's extensive contacts with industry through his work with the Purdue Technical Assistance Program, and the willingness of companies to participate on an on-going basis have greatly assisted this process. One of the more interesting recent developments is the strong current interest of health care providers and hospitals to get involved with the class on a long-term, formal, basis.

To build upon the current success of his work with TAP and IE senior design, Dr. Lehto is currently involved in establishing a Discovery to Delivery Center here at Purdue that will provide a consolidated framework for (1) recruiting organizations with suitable projects, (2) providing resources to the student teams, and (3) disseminating project results. Funding for the proposed center has already been committed by TAP and the Schools of Engineering to provide support for Dr. Tom Brady who is currently Department Chair of the Department of Engineering Technology at Purdue University North Central. Dr. Brady will be a Co-Director of the center with Dr. Lehto. Dr. Lehto is also conducting research and development on new web-based tools for the center and IE senior design. To launch this project, in February 2009, Dr. Lehto invited

Dr. Yi, a recent graduate of Georgia Tech who joined the School of Industrial Engineering in 2008, to work with Dr. Lehto, Dr. Brady, and the IE 431 teaching assistants to develop new web based tools for the class and evaluate their effect on student-client collaboration and project management. A requirements analysis was completed in May 2009, and prototype system was developed using Confluence based on student inputs that will be deployed and evaluated in the Fall 2009 semester. Dr. Lehto is planning to present the results at the *National Capstone Design Conference* in 2010.

Coeus Proposal Development - Budget Summary

Proposal Number: 00027403   **Budget Version : 1**

Proposal Title: Engineering 2020

Investigator Name: LEHTO, MARK R

Period : 1   01 Jun 2010 - 31 Aug 2010

	Personnel Category	Start Date	End Date	EB Rate	Vac Rate	Percentage Charged/Effort	Fringe Benefits	Salaries & Wages
Senior Personnel								
LEHTO, MARK R	Personnel - Tenure/Tenure Track Faculty	07/01/10	07/31/10	37.30%		10.0 / 10.0	$370.42	$993.08
						Total Senior Personnel	$370.42	$993.08
Postdoctoral								
CHOCKALINGAM, ARUNACHALAM	Personnel - Post Doc/Visiting Faculty	07/01/10	07/31/10	45.30%		10.0 / 10.0	$347.76	$767.69
						Total Postdoctoral	$347.76	$767.69

TOTAL SALARIES & WAGES	$1,760.77
Fringe Benefits: Total Fringe Benefits and Vacation Accrual:	$718.18
TOTAL SALARIES & WAGES & FRINGE BENEFITS	$2,478.95
Materials	
Other Supplies & Expenses	$521.05
Total Materials	$521.05
Total Direct Costs	$3,000.00
F&A (Indirect) Costs	
ON-CAMPUS	$0.00
Total F&A (Indirect) Costs	$0.00
Total Cost to Sponsor	$3,000.00
Total Underrecovery Amount	$0.00
Total Cost Sharing Amount	$0.00
TOTAL COST OF PROJECT	$3,000.00

Subject: RE: Engineering Entrepreneurship Curriculum Development Grant
From: "Joseph F. Pekny" <pekny@purdue.edu>
Date: Mon, 3 May 2010 07:18:47 -0400
To: <arunachalam@purdue.edu>
CC: "Duket, Steven D" <sduket@purdue.edu>, "'Mark Lehto'" <lehto@purdue.edu>

Arun,

I think including an entrepreneurship component in IE 431 is a great idea.
The idea below is a good start.

The School will provide necessary cost share.

Thanks,
Joe

> -----Original Message-----
> From: Arun Chockalingam [mailto:achockal@ecn.purdue.edu]
> Sent: Monday, May 03, 2010 6:55 AM
> To: pekny@purdue.edu
> Subject: Engineering Entrepreneurship Curriculum Development Grant
> Importance: High
>
> Prof Pekny,
>
> I've been meaning to submit a proposal for this grant, but until now, I
> hadn't gotten any decent ideas. I've got one now though, and I've put it
> across to Prof Lehto for his feedback. I'd appreciate yours as well.
>
> The whole point of the grant is to integrate entrepreneurship into
> Engineering curriculum. I was thinking, a good place to include
> entrepreneurship ideas is the senior design class. Specifically, I
> thought as part of the final report, students should be required to
> include a section on a business plan of their proposed project. They
> already create budgets for their projects. The business plan could
> possibly be the next step. Including this requirement would make them
> read up on it, and learn the concepts. We could also link this to IE
> 343, saying that some portion of IE 343 should be devoted to talking
> about entrepreneurship and business plans. And to assess these business
> plans, we could ask the client companies to assess these plans and
> provide feedback on them. Also, students have to take a survey anyway at
> the end of IE 431. As part of this survey, we could add some questions
> related to business plans, just to test how well they have understood
> the concepts. These questions will not be graded, but will let us know
> how much they have learned.
>
> The deadline for this proposal is today, and unfortunately, I have the
> final exam of IE 343 to take care of. I shall try my best to get the
> proposal created though if you think this idea is good enough to be
> submitted. Oh, and do you think the school would be able to match funds?
> The CFP requires a letter of cost-sharing support from the school if
> applicable, which is why I'm asking. Thanks, I look forward to your
> response.
>
> --
> Regards,
> Arun

Arunachalam Chockalingam

arunachalam@purdue.edu

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315 N. Grant St, West Lafayette, IN 47907
Office ph: (765) 496-7565
Res. ph: (765) 807-7054
Cell: (765) 714-6780

EDUCATION

2008, **Doctor of Philosophy**
School of Industrial Engineering, Purdue University, West Lafayette, IN, USA
Dissertation: *Moving-Boundary Approaches for American Security Valuation*
Advisors: Kumar Muthuraman and Bruce W. Schmeiser
Committee members: Mark A. Lawley, Jose E. Figueroa-Lopez and Hong Wan

2006, **Master of Science**
School of Industrial Engineering, Purdue University, West Lafayette, IN, USA
Thesis: *Valuing American Options by Moving Boundaries*

2004, **Bachelor of Science (Hons) in Actuarial Science, First Class**
Faculty of Actuarial Science and Statistics, Cass Business School (City University), London, UK

EXPERIENCE

Aug 2009 – present, **Visiting Assistant Professor**, School of Industrial Engineering, Purdue University

Aug 2007 – Dec 2008, **Graduate Teaching Assistant**, School of Industrial Engineering, Purdue University
Courses: Stochastic Models in Operations Research (Graduate level)
       Simulation Design and Analysis (Graduate level)
       Probability and Statistics in Engineering (Undergraduate level)
       Systems Simulation (Graduate level)

Aug 2005 – Dec 2006, **Graduate Teaching Assistant**, Department of Mathematics, Purdue University
Courses: College Algebra (Instructor)
       Calculus (Recitation instructor)

June – Aug 2003, **Summer Intern**, Hewitt Bacon and Woodrow, Epsom, UK
Actuarial consultants for pension funds

AWARDS & HONORS

- Invited to join Industrial and Systems Engineering Honor Society, Alpha Pi Mu, 2005

- David Notley Memorial Prize for performance in Probability and Statistics Examination, Faculty of Actuarial Science and Statistics, Cass Business School, 2003

- Overseas Student Scholarship, Faculty of Actuarial Science and Statistics, Cass Business School, 2001–2003

JOURNAL PUBLICATIONS

1. A. Chockalingam and K. Muthuraman. Pricing American Options when Asset Prices Jump. *Operations Research Letters*, 38(2), 82–86, 2010.

2. A. Chockalingam and K. Muthuraman. American Options under Stochastic Volatility. *Operations Research*, in revision.

3. A. Chockalingam and K. Muthuraman. An Approximate Moving Boundary Method for American Options. *Quantitative Finance*, in revision.

4. A. Chockalingam and K. Muthuraman. American Options under Stochastic Volatility: A Simulation-Based Approach. *Proceedings of the 2007 Winter Simulation Conference*, 992–997, 2007.

5. K. Jayakumar, A. Chockalingam and M. A. Lawley. Stochastic Optimal Control for Avoiding Emergency Department Divert. *Proceedings of the 2010 Industrial Engineering Research Conference*, submitted.

WORKING PAPERS

6. A. Chockalingam, H. Feng and K. Muthuraman. Error Bounds for American Option Exercise Policies.

7. K. Jayakumar, A. Chockalingam and M. A. Lawley. Divert Avoidance for Hospital Emergency Departments using Petri Nets and Optimal Control.

CONFERENCE PRESENTATIONS

1. A. Chockalingam and K. Muthuraman. *American Options under Stochastic Volatility and Jumps.* SIAM Conference on Financial Mathematics and Engineering. New Brunswick, Nov 2008.

2. A. Chockalingam and K. Muthuraman. *American Options under Stochastic Volatility.* INFORMS Southwest Regional Conference. College Station, Apr 2008.

3. A. Chockalingam and K. Muthuraman. *American Options under Stochastic Volatility: A Simulation-Based Approach.* Winter Simulation Conference. Washington D.C., Dec 2007.

4. A. Chockalingam and K. Muthuraman. *American Options under Stochastic Volatility.* INFORMS Annual Conference. Seattle, Nov 2007.

5. A. Chockalingam and K. Muthuraman. *American Options under Stochastic Volatility.* INFORMS Midwest Regional Conference. Evanston, Aug 2007.

SEMINARS

1. Department of Industrial and Systems Engineering, University of Florida, Jan 2010.

2. Computational Finance Seminar, Department of Statistics, Purdue University, Feb 2010.

PROPOSALS & GRANTS

- National Science Foundation. *Moving Boundary Methods for Stochastic Control Problems: With Applications in Financial Engineering and Healthcare.* Co-PI with K. Muthuraman and M. A. Lawley. Submitted.

- Regenstrief Center for Healthcare Engineering. *Avoiding Emergency Department Diversion.* PI with M. A. Lawley. Submitted.

ACADEMIC SERVICE

- Ad hoc reviewer for *Operations Research*.

- Invited reviewer for *Regenstrief Center for Healthcare Engineering* Seed Grant proposals.

- Lead in project on assessing and restructuring Purdue Industrial Engineering undergraduate curriculum.

- Member of team revamping course outcomes assessment procedure, Purdue Industrial Engineering. Co-authored a proposal with S. Landry.

TEACHING

Semester	Department	Course	Student Enrollment	Course Evaluation [*]	Instructor Evaluation [*]
Fall 09	Ind. Eng.	IE 343 Engineering Economics	267	4.0	4.1
Fall 08	Ind. Eng.	IE 230 Probability and Statistics in Engr. (TA)	-	-	-
Spr 08	Ind. Eng.	IE 536 Stochastic Models in OR (TA)	-	-	-
Spr 08	Ind. Eng.	IE 581 Simulation Design and Analysis (TA)	-	-	-
Fall 07	Ind. Eng.	IE 580 Systems Simulation (TA)	-	-	-
Fall 06	Math	MA 152 College Algebra	approx. 40	-	4.3
Spr 06	Math	MA 152 College Algebra	approx. 40	-	4.2
Fall 05	Math	MA 161 Plane Analytic Geometry and Calculus I	approx. 40	-	4.7

[*] Evaluation scores are on a scale of 1 (very poor) to 5 (excellent), and are obtained from students' response to question 'Overall, I would rate this course as:' and 'Overall, I would rate this instructor as:'.

PROFESSIONAL AFFILIATIONS

- Institute of Industrial Engineers

- Institute for Operations Research and the Management Sciences (INFORMS)

    - Simulation Society

- Alpha Pi Mu

REFERENCES

1. Kumar Muthuraman
   Assistant Professor, IROM Department, McCombs School of Business, UT Austin
   kumar@mail.utexas.edu
   +1 (512) 232-3732

2. Bruce W. Schmeiser
   Professor, School of Industrial Engineering, Purdue University
   bruce@purdue.edu
   +1 (765) 491-8665

3. Mark A. Lawley
   Professor, Weldon School of Biomedical Engineering, Purdue University
   malawley@purdue.edu
   +1 (765) 494-5415

4. José Figueroa-López
   Assistant Professor, Department of Statistics, Purdue University
   figueroa@stat.purdue.edu
   +1 (765) 494-6036

February 2010

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED TWO PAGES.**

NAME	POSITION TITLE
Lehto, Mark R.	Associate Professor of Industrial Engineering
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
The University of Michigan	Ph.D.	1985	Industrial Engineering
Purdue University	M.S.I.E.	1981	Industrial Engineering
Oregon State University	B.S.I.E	1978	Industrial Engineering

A. Positions and Honors.

Positions and Employment

1986-1992	Assistant Professor, School of Industrial Engineering, Purdue University, West Lafayette, IN.
Fall 1989	Visiting Assistant Professor, Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI.
1992-	Associate Professor, School of Industrial Engineering, Purdue University, West Lafayette, IN.
1993	Visiting Associate Professor, Department of Psychology, University of Western Australia, Nedlands, Western Australia.
2004-	Co-chair, Interdisciplinary Graduate Program in Human Factors, Purdue University, West Lafayette, IN.
2005-	Technical Advisor, Purdue Technical Assistance Program, Purdue University, West Lafayette, IN.

Other Experience and Professional Memberships

1979-present	Member, Alpha Pi Mu, Industrial Engineering Honor Society
1984-1986	Senior Research Engineer, J.M. Miller Engineering, Ann Arbor, MI.
1986-	Member, Human Factors and Ergonomics Society
1987-	Senior Member, Institute of Industrial Engineers
1992-	Member, International Society for Occupational Ergonomics and Safety
1992-	Member, Society for Hazard Communication
1993	Visiting Research Scholar, Liberty Mutual Research Center, Hopkinton, MA.
1995-	Member, American Society of Safety Engineers
2008	Visiting Research Scientist, Liberty Mutual Research Institute for Safety, Hopkinton, MA.

Honors

1981	NIOSH Fellowship in Occupational Safety, Center for Ergonomics, University of Michigan, Ann Arbor, MI.
1987	First Place Award, Engineering Design Competition in Passive Restraints, sponsored jointly by the American Society for Engineering Education and the General Motors Corporation.
1989	Presidential Young Investigator Award, National Science Foundation.
1991	NEC Faculty Fellow, Schools of Engineering, Purdue University.
1995	GM Faculty Fellow, Schools of Engineering, Purdue University.
2006	College of Engineering Team Excellence Award, Purdue University.

B. Selected (10) Relevant Publications (in chronological order).

1. Lehto, M.R., Zhu, W., and Carpenter, B., "The Relative Effectiveness of Hypertext and Text," *International Journal of Human-Computer Interaction*, 1995, Vol. 7, No. 4., pp. 293-313
2. Zhu, W. and Lehto, M.R., "Decision Support for Indexing and Retrieval of Information for Hypertext Systems," *International Journal of Human-Computer Interaction*, 1999, Vol. 11, No. 4, pp. 349-371
3. Leman, S. and Lehto, M.R., "Interactive Decision Support System to Predict Print Quality," *Ergonomics*, 2003, Vol. 46, pp. 52-67
4. Wellman, H., Lehto, M.R., Sorock, G., and Smith, G., "Computerized Coding of Injury Narrative Data from the National Health Interview Survey," *Accident Analysis and Prevention*, Vol. 36, Issue 2, 2004, pp. 165-171
5. Choe, P., Kim, C., Lehto, M. R., Lehto, X., and Allebach, J., "Evaluating and Improving a Self-Help Technical Support Website: Use of Focus Group Interviews," *International Journal of Human-Computer Interaction,* Vol. 21, No. 3, 2006, 333-354
6. Noorinaeini, A. and Lehto, M.R., "Hybrid Singular Value Decomposition; a Model of Text Classification," *International Journal of Human Factors Modeling and Simulation*, Vol. 1, No. 1, 2006, pp. 95-118.
7. Wu, S., Lehto, M.R., Yih, Y., Saleem, J., and Doebbeling, B., "Relationship of Estimated Resolution Time and Computerized Clinical Reminder Adherence," *Proceedings of the American Medical Informatics Association (AMIA) Annual Symposium,* 2007, pp. 334-338.
8. Lehto, M.R. and Buck, J.R., *An Introduction to Human Factors and Ergonomics for Engineers*, Lawrence Erlbaum Associates: Taylor and Francis Group, NY, 2008, 838 pages.
9. Lehto, M. R., Wellman, H.M., and Corns, H., "Bayesian Methods; A Useful Tool For Classifying Injury Narratives Into Cause Groups," *Injury Prevention*, 2009, in press.
10. Choe, P., Lehto, M. R., and Allebach, J., "Query Translation-Based Cross-Language Print Defect Diagnosis Based on the Fuzzy Bayesian Model," *Computers in Industry*, 2009, 25 pages, accepted

C. Synergistic Activities

Dr. Mark Lehto and his students have worked closely with several organizations to develop computer-based methods and interfaces for decision support. This work includes a project funded by Hewlett-Packard Company that resulted in the development of a self-help web site for users of laser printers that is now in use, for 12 models of printers, with thousands of hits daily. A second project, which also involved Dr. Zafar, a participant in the currently proposed project, resulted in an initial prototype of a handheld device to be used by physicians and nurses to enter and access data from electronic medical record keeping systems. This device provided a pen-based interface for input of physician notes, which included a feature for icon driven generation of phrases integrated with handwriting recognition. A third project, funded in part by Liberty Mutual Research Center, resulted in the development of a computer program for automatically reclassifying accident records, a task that is very tedious, and time-consuming, for human coders. Dr. Lehto has also worked with the Roudebush Veterans Administration Medical Center (VAMC), in Indianapolis, Indiana, on a collaborative project funded by the VA directed towards improving the interface to the computerized clinical reminder system currently in use at this and other hospitals across the country.

The use of Bayesian methods is a common theme of Dr. Lehto's work, and he has developed a program called Textminer which provides a convenient interface for applying this approach to text analysis and classification problems. This program was used to successfully classify incidents from narrative descriptions given in the National Health Interview Survey (Wellman, Lehto, Sorock, & Smith 2004), and more recently for e-coding (Lehto, Wellman, & Corns 2009). Since then, Dr. Lehto has worked with Liberty Mutual to study semi-automated methods of maximizing coding accuracy while minimizing the number of claims that must be coded manually. Dr. Lehto and his students have applied these methods in several other interesting applications. These latter projects include recent applications in which the Textminer program was used to (1) analyze discussions between call center agents and customers, (2) provide for cross language access and use of English language web pages by Korean users, and (3) perform content analysis of traveler complaints.