



1	Program Profile Communications Futures Program
4	Faces of Research Charley Fine Putting Value Chain Roadmapping on the Business Agenda
6	Reading Matters True Change: How Outsiders on the Inside Get Things Done in Organizations
7	Staff Spotlight Meet Donna Carty, IMVP Program Manager
8	Leaders Lecture A Transformed Nissan Faces Environmental, Industry, and Service Challenges
9	News at the Center
12	IMVP Sponsors Preview <i>The Solution Economy</i>

Building Connections, Flattening Barriers throughout the Communications Industry

By Nancy DuVergne Smith

Communications Future Program

During the telecom industry peak in 2000, Sloan Professor Charley Fine began working with MIT colleagues to expand technology roadmapping of optical communications to take a larger look at how the players throughout the telecommunications value chain interconnect.

As he sketched this new value chain roadmap, he found several MIT research groups were working on pieces of the chain. Some looked at regulatory policy or network innovations, but no one was examining how the pieces could work together to help the industry innovate and grow. In particular, how could the industry develop a healthy core among network builders as well as a healthy edge, where device makers sell PCs and cell phones? Many questions, few answers, he thought. And so, Fine began building a coalition that resulted in the Communications Futures Program (CFP).

Working Groups Drive Partnership

CFP, launched in June 2004 jointly with the Communications Innovation Institute at Cambridge University, operates with collaborative leadership.

CFP revolves around an innovative working group model, flexible groups generally co-led by an academic and an industry partner. Each working group

of a dozen or so people identifies critical questions, digs into industry and academic resources to answer them, and shares results internally, then with broader group at semiannual meetings.

Fine, the Chrysler LFM Professor of Management and Engineering Systems and a longtime researcher in CTPID's International Motor Vehicle Program, and Dirk Trossen of Nokia lead the Core-Edge Dynamics: Business Models and Technologies Working Group. The group is developing a series of case studies, including music distribution, RFID tags and readers, and voice over IP telephony, to look at how competing business models and dynamics shape profitability. In music for instance, Apple's iTunes and Napster's first incarnation distributed music from the core and Kazaa now is thriving on the edge. "There are a range of different models for music distribution and they are different in the way they use the core or the edge of the network. So, we're using that as one case study to try to shed more light on the dynamics of the core-edge."

ITC Research Folds into CFP

Two other working groups are headed by CTPID's David Clark, senior research scientist at the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), and Sharon Eisner Gillett, CTPID principal research associate. The Internet

continued on next page

Center for Technology, Policy,
and Industrial Development

COMMUNICATIONS FUTURES PROGRAM SNAPSHOT

URL: cfp.mit.edu

CFP focuses on four key issues:

- Invent technologies that create discontinuous innovation.
- Create enablers of industry transformation involving broadband infrastructure, regulation, privacy and security, edge core dynamics, rights management, and others.
- Align members across the communications value chain to speed innovation.
- Develop awareness of big opportunities from emerging technologies.

Working Groups

- Core-Edge Dynamics: Business Models and Technologies
- Viral Communications: Technologies That Create Discontinuous Innovation
- Internet Architecture: Quality of Service, Denial of Service, Inter-provider Routing
- Broadband
- Security and Privacy

Sponsors

Led by MIT and Cambridge University, CFP has won support from sponsors including British Telecom, Cisco, France Telecom, HP, ICU (Korea), Intel, Lego, MasterCard, Motorola, Nokia, Nortel, Samsung, Swatch, and Telmex.

Internet Architectures group leader David Clark stays connected during the January 25-27 sponsor meetings at MIT.



continued from cover

and Telecoms Convergence (ITC) focus on the interplay of Internet architecture, economics, and policy has folded into the CFP value chain as Clark and Gillett bring the ITC research core into the new consortium. ITC was founded in 1996 to look at the impending collision between two industry sectors — the historically highly regulated telephone companies and the unregulated Internet companies. Today, CFP is looking at these challenges in a broader context.

Clark's core research interests include the Internet's technical infrastructure as well as how regulation shapes business competition and consumer choice. "What I've been doing for my entire life on the Internet is building frameworks. That's what architecture is," said Clark, an Internet pioneer since the '70s.

Clark is leading the Internet Architectures Working Group, which involves subgroups focusing on Denial of Service, Inter-Provider Routing, and Quality of Service. The Internet Architectures Working Group is exploring the future of BGP, the Internet's inter-provider routing protocol invented in the '80s. Questions include whether BGP can

manage the increasing traffic and complexity and, if not, what options should its successor provide.

A Forum for Consensus

The industry-academic consortium provides an opportunity for consensus building and decisions on critical topics. "The importance of the consortium is that it's going to give us a vehicle for talking about frameworks in which individual things can be stuck," Clark said. "So, could we find a better framework for security? There have been five or six good academic papers written on an approach to dealing with denial of service. But these are different approaches. And, in order to work, lots of people have to deploy them. How is that decision going to occur?"

Gillett shares the leadership of the Broadband group with France Telecom's John Watlington. Their group is working to identify and flatten potential barriers to a virtuous cycle of investment in broadband. A virtuous cycle operates when growing Internet usage drives demand for access and that, in turn, sparks investments in access networks, which support innovation and growth in applications that increase usage. This becomes a vicious cycle when incentives are misaligned, like now when profit making on



CFP's Broadband Working Group meets biweekly via teleconferences. Group co-chair Sharon Gillett, right, initiates a call. MIT-based participants include, from left, Whey Lee, Motorola Lab; CFP's Andy Lippman and David Reed; Technology and Policy graduate student Gabriel Weinberg; and group co-chair John Watlington, France Telecom.

the edge of the network does not provide incentives, i.e. profits, to the core network developers.

Small groups within the Broadband Working Group are tackling separate topics. One is researching ways to minimize or monetize broadband usage costs. "The way broadband is priced now, which is largely flat rate, carriers don't get any benefit out of increased usage," Gillett said. "They can only get that benefit if they somehow monetize that increased usage in another way." Core companies could offer services like a movies on demand with extra charges but so could many other companies. The challenge is to identify profit opportunities where core companies have a particular advantage. "We're trying to brainstorm things that might give the network operators more incentive to go along with virtuous cycle."

The Viral Working Group is headed by Andrew Lippman, senior research

scientist at the MIT Media Laboratory, and David P. Reed, adjunct professor at the MIT Media Laboratory and HP Fellow, Hewlett-Packard Laboratories.

This group looks at the implications of building infrastructure-free networks, such as distributed sensor networks and cooperative radio. Initial topics include open spectrum management and exploring the unlimited potential of Wi-Fi.

Working Groups Heighten Involvement

The working group format, which brings teams together as often as twice a month, ratchets up the commitment both for researchers and their industry partners.

"The idea of the working group is to involve the sponsors much more directly in the selection of what topics are important to work on," Gillett noted. Industry representatives commit funding as well as time when groups meet frequently and each member participates in research and thinking. Further, when new ideas

are documented, the companies involved are more likely to disseminate and use the information internally.

Identifying barriers to a healthy core-edge relationship and developing consensus on future directions is challenging, especially when participants are competing along the communications value chain. However, any decisions that emerge from these groups will have a better chance of implementation in the industry.

"Ultimately, the object is a white paper and the dissemination of that white paper," said Gillett. "Because once you have consensus across different perspectives, sometimes conflicting perspectives, it's a very powerful thing. If we've got a consensus statement from people who should be adversaries then maybe we've got something that policy makers will actually listen to." ✚

Communications Value Chain



FINE IN PROFILE

Charley Fine put the terms clockspeed and value chain roadmapping on the business strategy map. His 1999 book, *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*, describes how different rates of change in different industries create opportunities. The Value Chain Roadmapping concept can help corporations work together to understand their interrelationship and mutual opportunities. Both terms are part of the Chrysler LFM Professor of Management and Engineering Systems' contributions that impact academic thinking and industry broadly. Fine's value chain roadmapping most recently led to the founding of the Communications Futures Program, which he co-directs. He has also led research groups including serving as co-director of the International Motor Vehicle Program, director of the Technology Supply Chain project, and associate director of the Center for Technology, Policy, and Industrial Development. He teaches in the Sloan Management Science group and his current work addresses technology sourcing decisions and supplier relations — in the communications industry and a variety of other manufacturing industries. Fine's educational background includes an A.B. in Mathematics and Management Science from Duke University in 1978, an M.S. in Operations Research from Stanford University in 1981, and a PhD in Business Administration (Decision Sciences) from Stanford University in 1983.



Interview with Charles H. Fine, Chrysler LFM Professor of Management and Engineering Systems, Sloan School of Management; co-director of the Communications Futures Program

Putting Value Chain Roadmapping on the Business Agenda

Charley Fine spearheaded the founding the Communications Futures Program (CFP) after he and MIT colleagues developed value chain roadmapping — tracking business and policy dynamics as well as technology dynamics to better understand how an industry might evolve over time. In 2004, he and colleagues launched this new university-industry partnership.

How did you build the Communications Futures Program partnerships?

I began trying to draw pictures of the communications value chain. Such diagrams included the consumer end of the value chain, which includes devices (like cell phones, PDAs, PCs, music devices, and cameras), networks (like cable or DSL broadband, cellular networks, wi-fi hotspots, satellites, and traditional telephone systems), and applications/content (like business software, email, music, videos, and games). To build a team that could cover the entire value chain, I started going around to the directors of MIT labs and programs that did research on parts of the value chain, asking whether they'd see some benefit to collaborating to look at the value chain holistically rather than piece by piece. In response, Dave Clark at CSAIL and ITC, Sharon Gillett at ITC, and Andy Lippman and Dave Reed in the

Media Lab collaborated with me to launch the CFP program, with further collaboration with colleagues from the Microphotonics Center and Research Lab for Electronics in the Engineering School as well as from the Center for eBusiness in the Sloan School of Management.

“This idea of value chain roadmapping is to say, let’s go beyond just thinking about what we want to achieve technologically.”

What are the goals of your CFP Core-Edge Dynamics Working Group (CEWG)?

The CEWG is co-chaired by Dirk Trossen, a research scientist at Nokia, one of CFP’s first industrial sponsors, and me. The CEWG focuses on the dynamics of how certain functions and applications in communications move from the edge of the network to the core of the network or from the core to the edge. As an example, take voice mail. When I first got voice mail over 20 years ago, it was by buying an answering machine, plugging it into a jack in the wall, and having my own answering machine as the voice mail device. That’s an edge solution. Today, my voice mail at home is actually stored by Verizon. That is, if I don’t answer my phone, Verizon picks up the phone, answers with my name, and takes the voice mail. That’s a core-based solution for voice mail. So that’s an example of a dynamic where function moved from the edge to the core. New voice-over-Internet (VOIP) applications, which are poised to be the next major shift in telephony, will likely move voicemail back to the edge device, representing another shift in the core-edge dynamics.

Why do we need to understand this core-edge dynamic?

It relates to who makes the money and what money can be made. Traditionally, the core players are the telecom network companies — Verizon, SBC, BellSouth, AT&T — as well as the large cable companies, like Time Warner and Comcast.

On the other hand, edge-oriented companies are Nokia, Apple, or Intel.

The core players, especially the incumbent phone companies, are concerned that the pipeline they provide to transport information is rapidly becoming a commodity that people aren’t willing to pay a premium for. There’s a perception that a lot of the innovation and profit is being generated at the network’s edges. However, if there’s no business model for how to make money at the core, then who is going to provide this high-speed bandwidth that enables the edge capability? In some sense, the network needs a healthy core and healthy edge. And trying to understand where innovations will come from, where the profits will be, what the business opportunities are for the core and the edge, we think is useful for trying to understand the future, the dynamic evolution of the communications network as well as helping our industry sponsors think about what business models will be viable and or profitable.

Did your insights in *Clockspeed* anticipate aspects of this value chain concept?

I think of *Clockspeed* as providing models of industry dynamics and supply chain dynamics. The models are helpful for getting people to think about how their industry, their business, and their supply chains will change over time. And it may help them think about how to prepare for the changes that are likely to come about – or even stimulate them. So, it’s thinking ahead that’s the value.

How has your long involvement with IMVP, including serving as co-director, supported your research interests?

I think of the automotive industry as a very rich, complex industry. Because I’ve gotten to know it reasonably well, it’s kind of a touchstone industry for me. Even when I’m thinking about the telecoms industry, I try to draw analogies to automotive. I find it’s enormously useful to look at questions from multiple industry perspectives. IMVP has given me an opportunity, over a significant period of time, to get a depth of knowledge about automotive industry issues and perspectives.

What can students learn from your phrase ‘All competitive advantage is temporary?’

I use that phrase partly because in the business strategy literature there’s a lot of discussion about creating sustainable competitive advantage. In looking at fast clockspeed industries, the dominant observation that comes to me repeatedly is that it’s very, very hard to create sustainable advantage. And so I’ve tried to use the term “temporary advantage” to communicate that maybe sustainable advantage is too high an aspiration. Rather, you’ve got to be prepared to change on a fairly frequent basis, which is often hard for organizations to do. ✚

Reading Matters

New books, publications, and web pages by faculty and research staff

True Change: How Outsiders on the Inside Get Things Done in Organizations

By Janice A. Klein, Ford-MIT Alliance
Josey-Bass/Wiley, 2004



True Change is not just another change management book, contends Janice Klein, a Sloan School of Management senior lecturer who leads a Ford-MIT Alliance project on systems-driven product development and manufacturing. Rather, the book distills the process of systemic change framed in operational terms. *True Change* describes how to build change capacity, not just how to manage change.

Klein examines the nature of change and compares true change, which lasts beyond its champion and the next reor-

ganization, to temporary change, which dissipates when the pushing stops. True change, she says, joins three basic concepts. First, it occurs only from within. Second, it comes from a pull for new ideas, not a push from outside. In other words, “change occurs when insiders identify a specific challenge they are facing as an opportunity to pull in outside perspectives.” And third, there is an organizational support system that develops and nurtures internal change agents.

The combined power of these concepts creates a new dynamic, she says. She identified this synthesis through studies of manufacturing competencies in twelve major companies, the development of effective virtual teams, and how on-the-job employees learn new concepts through distance education.

A key factor in making this new mix work is finding “outsider-insiders.” Klein identifies these change agents as people who can understand daily operations and who are committed to the organization as insiders, yet can step back and see how internal assumptions can impede optimal performance.

Remaining open to outside ideas is challenging within deeply ingrained corporate cultures, the book points out. Personal stamina and strong belief systems are needed to continually seek alternative perspectives. As one veteran outsider-insider said, “It’s a personal belief that it really can get better.”

Just Published: *Valuable Disconnects in Organizational Learning Systems*

Joel Cutcher-Gershenfeld, Lean Aerospace Research Agenda co-director, and J. Kevin Ford recently published *Valuable Disconnects in Organizational Learning*

Systems: Integrating Bold Visions and Harsh Realities with Oxford University Press (2005).

“Sustained progress requires more than management mandates,” noted Peter Senge, founder of the Society for Organizational Learning, in a commentary about the book. “It requires appreciating and learning from the breakdowns, frustrations and dilemmas that invariably arise from significant change processes. *Valuable Disconnects* is one of the first books to recognize this and offer cogent advice for how to do it.”

The Business of Software Named a Top IT Business Book

The respected Booz Allen Hamilton Inc. magazine, *strategy+business*, named IMVP Co-Director Michael Cusumano’s new book one of the top IT business books of 2004. The book, *The Business of Software: What Every Manager, Programmer, and Entrepreneur Must Know to Thrive and Survive in Good Times and Bad*, holds lessons about the IT industry that apply to the automotive industry, Cusumano says. Both industries need to look to services as well as products for profitability.

“In the automobile industry, price competition, and rising costs have become so intense that few companies make much, if any, money from products directly,” said Sloan Professor Cusumano. “They often make most of their money from financial services. In the future, however, automobile companies, like software companies, may have to become much more creative in finding ways to generate service revenues from their products. They might, for example, treat the automobile as a platform for selling various information, navigation, and communication services.”

UPCOMING

"Perspectives in Design: The Deacon's Masterpiece and the Hundred-Year Aircraft, Spacecraft, and Other Complex Engineering Systems," by Joseph Saleh, co-executive director of the Ford-MIT Alliance. The article builds on an Oliver Wendell Holmes poem, the *Deacon's Masterpiece*, and raises contemporary design issues on flexibility and sustainability. Scheduled to appear July 2005 in the *Journal of Mechanical Design*.

NEW PUBLICATIONS

Communications Futures Program (CFP) / Internet and Telecoms Convergence (ITC)

<http://itc.mit.edu/> (see research)

Gillett, Sharon, William Lehr, Carlos Osorio. (2004). "The Municipal Role in U.S. FTTH Market Growth" (PDF). Prepared for the FTTH Council's 3rd Annual FTTH Conference & Expo, Orlando, FL, Oct. 4-6, 2004.

Lehr, William, Marvin Sirbu, Sharon Gillett, Anupam Banerjee. (2004). "Broadband Open Access Case Studies." (PDF)

Lehr, William, Marvin Sirbu, Sharon Gillett. (2004). "Municipal Wireless Broadband: Policy and Business Implications of Emerging Access Technologies." (PDF & slides). Draft paper presented at London Business School Conference on Competition in wireless and wireline services, May 14, 2004.

Lehr, William. (2004). "Economic Case for Dedicated Unlicensed Below 3 GHz," (PDF & slides). Draft paper presented at a New America Foundation conference, April 16, 2004.

Neto, Isabel, Michael Best, Sharon Gillett. (2004). "License-Exempt Wireless Policy: Results of an African Survey." (PDF) Prepared for ITS 15th Biennial Conference, Sept. 4-7, 2004, Berlin, Germany.

Lean Aerospace Initiative (LAI)

<http://lean.mit.edu/> (see publications)

Bresman, P. Henrik M., "Learning Strategies and Performance in Organizational Teams." Thesis, November, 2004

Downen, Troy D., "A Multi-Attribute Value Assessment Method for the Early Product Development Phase with Application to the Business Airplane Industry." Thesis, Nov. 2004.

McManus, Dr. Hugh L. "The Space Systems, Policy, and Architecture Research Consortium (SSPARC) Final Report." Sept. 2004.

MIT Information Quality Program (MIT IQ)

<http://mitiq.mit.edu/Publications.htm#2004>

Wang, Richard. "Data Quality: Theory in Practice," *EPA 23rd Annual Conference, April 2004*. (Executive summary)

Lee, Yang, Richard Y. Wang, et al. (Size 1.47 MB) "Process Embedded Data Integrity," *Journal of Database Management*, Jan.-March 2004, Vol. 15, No.1, 2004.

WEB FEATURES

International Motor Vehicle Program

Take a visual tour of the 2004 International Motor Vehicle Program's Annual Sponsors Meeting at the University of Cambridge, UK: imvp.mit.edu/uk_tour.html. Also, tour the Japan study tour and conference. ✚

Staff Snapshot



**MEET DONNA CARTY,
PROGRAM MANAGER,
INTERNATIONAL MOTOR
VEHICLE PROGRAM**

Program Manager Donna Carty's influence on the International Motor Vehicle Program (IMVP) goes beyond organizational management. Her personal approach engages researchers and sponsors alike in the IMVP community, whether at an MIT research meeting or a UK sponsor event or via phone or email.

Carty began her IMVP career working at CTPID from 1995-98. Shortly thereafter she moved to Florida but returned, virtually, to IMVP in 2000. Since then, she's worked with program leaders, researchers, and sponsors at MIT, the University of Pennsylvania and dozens of other universities. Her work includes sponsor communications and fiscal and events management. Supervising a virtual organization requires expert skills and persistence, but Carty thrives in this atmosphere.

"I love the energy and positive spirit of these very bright PhD students," Carty said. "They are doing important work worldwide under the guidance of stellar faculty because they honestly believe they can make a difference in the future of the automotive industry's sustainability." ✚

A Transformed Nissan Faces Environmental, Industry, and Service Challenges

By Nancy DuVergne Smith

The Nissan Motor Company is facing challenges like the rest of the auto industry. Environmentally friendly cars cost more to build than customers are willing to pay. Only a few companies – notably Toyota, Honda, and Nissan – are profitable and this will eventually destabilize the industry. And consumers hate the experience of buying cars.

Nissan President and CEO Carlos Ghosn shared these challenges with an MIT audience at the Industry Leaders in Technology and Management lecture, Nov. 10, as well as some solutions he has built into Nissan's transformation into a profitable carmaker. The lecture entitled "A New Model in the Global Automotive Industry?" was co-sponsored by the MIT Office of Corporate Relations and the Center for Technology, Policy, and Industrial Relations.

When Ghosn, then executive vice president of the Renault Group, became Nissan CEO in 1999, he figured he had a 50-50 chance of reviving the chronically unprofitable automaker. "In the '90s, Nissan was a company on life support with \$20 billion in debt. Renault decided to form an alliance, not a merger. We created something unique in the auto industry and in industry overall."

Ghosn's team put together a turnaround plan in three months based on input from young Nissan workers and it broke most of the rules of Japanese industry. They closed five plants, reduced headcount by 20,000, and dismantled traditional concepts like keiretsu, which allows a group of companies to hold equity in one another.

The alliance has offered both Renault and Nissan advantages. Both companies

"We are not zealots and don't pretend to be visionaries. We push synergy only if we can gain measurable improvements."

can move into new markets faster and with lower costs because they don't have to build new plants: Renault builds cars in Nissan's Mexico plants and Nissan uses Renault's Brazil plant and distribution networks. Both companies are collaborating on building common platforms, components, and engines allowing more flexibility in their products. Each company leads engine design in their area of expertise — Renault with diesel engines and Nissan with gasoline engines — then trade products. And the Alliance has improved purchasing power by buying for six million cars, rather than half that number.

As Nissan faces future challenges and Ghosn anticipates adding CEO and president of Renault to his titles in 2005, he says he'll rely on the strengths of two distinct work forces — French innovation in concept stages and Japanese dedication to process in manufacturing. This alliance has so far boosted the profitability, market capitalization, and sales in 192 countries for both partners.

Nissan President and CEO Carlos Ghosn, right, with Engineering Dean Thomas Magnanti.



"The alliance allows us to give our customers what they want faster and everyone wins," Ghosn said. "We are not zealots and don't pretend to be visionaries. We push synergy only if we can gain measurable improvements." ✚

CONSUMERS DECIDE ON NEW TECHNOLOGIES

"I don't buy it' is the ultimate decision on new technologies," Nissan President and CEO Carlos Ghosn told an MIT audience at the Industry Leaders in Technology Management lecture, Nov. 10. Five years into his transformation of Nissan Motor Co., Ltd., into a profitable carmaker, Ghosn said the key to building environmentally friendly cars is developing technologies that customers value. "We have to select the technologies that consumers are ready to pay for – and there are not many right now."

News at the Center



Ford-MIT Alliance co-executive directors Simon Pitts, right, and Joseph Saleh, lead the lunch discussion on Driving for Success.

Ford-MIT Alliance Targets Value, Interdisciplinary Projects

Success, sustainability, and stakeholders are the three Ss held together with value in the Ford-MIT Alliance, said MIT Co-Executive Director Joseph Saleh, at the Nov. 15, 2004, CTPID Community Lunch talk titled "Driving for Success." He added that developing value for all the stakeholders at Ford and at MIT will pave the way for success and sustainability.

Ford's Executive Co-Director Simon Pitts said one key lesson learned from the alliance is that projects must align with both Ford's business needs and MIT's skills and needs. And this mutual benefit must be considered at the start of every project.

"The vision," Pitts said, "is to provide the capability to propel the Ford Motor Company to the world's leadership in safe, environmentally responsible, consumer-focused personal mobility through innovation, science, and technology. The mission is to operationalize that by anticipating the technology needs of the customers and the company, to innovate solutions to technical challenges, and to incorporate the developing technologies into products and processes."

The goal of current projects is to gain competitive advantage through collaborative research in the areas of powertrain, active safety, environmental, and product development in addition to emerging opportunities. Projects must match Ford's evolving needs in four key areas: occupant and pedestrian safety, fuel economy and performance, emissions and the environment, and sustainable personal mobility.

"One challenge is to set up future projects that include focused, in depth research but also interdisciplinary work," Pitts said. "Safety technology is an example. Early work on passive safety on safety belts, crumple zones, and vehicle compactability is progressing in a focused area. Active safety uses ABS, tractor control, and adaptive cruise control for accident avoidance. Now we are trying to pick up cognitive information from the driver and match it with active systems in the vehicle. The task is no longer mechanical engineering, it's multidimensional."

Defense Finance and Accounting Service Joins LAI Consortium

Defense Finance and Accounting Service (DFAS), the world's largest finance and accounting operation, is a new LAI consortium member.

DFAS was created by the Secretary of Defense in 1991 to reduce the cost of finance and accounting operations as well as strengthen financial management. DFAS is financed by customers, rather than direct appropriations. The organization is responsible for paying more than 5.7 million personnel. It manages roughly \$176 billion in military retirement trust funds and has disbursed in excess of \$347 billion in more than 124 million accounting transactions.

System Design and Management Certificate Program Adopts LAI Simulation

LAI's Game, more formally called the Lean Enterprise Value Simulation, helped System Design and Management (SDM) Certificate Program students last summer understand lean concepts and organizational change dynamics. The class included students from a number of LAI consortium members, including Pratt & Whitney, Hamilton Sundstrand, Boeing Commercial Airplanes, Sikorsky, and Northrop Grumman.

continued on next page



MIT IQ Director Richard Wang leads a discussion at the Defense Logistics Information Service Defense Logistics Information Service.

Wang Brings Data Quality to Military Agency

More than a dozen information experts working on defense projects learned new ways to make data more useful during a five-day short course led by Richard Wang, director of the MIT Information Quality Program (MIT IQ). These Defense Logistics Information Service (DLIS) employees in Battle Creek, Mich., participated in an Information Quality course offered by Wang and other global experts such as Michael Mielke from German Rail and James Funk, a chief information architect for S.C. Johnson Company, who provided working examples of data quality projects.

During the Aug. 30-Sept. 3 course, each participant presented a data quality problem for class discussion. The students' final reports will detail the problem, the steps taken over six months to resolve it, and the results.

DLIS, a field activity of the Defense Logistics Agency, creates, obtains, manages, and integrates data from a variety of sources. The group shares this data through user-friendly products and services that support logistics operations throughout the Defense Department, other federal agencies, and the private sector.

Wang Slated to Receive DAMA Award

MIT IQ Director Richard Wang is scheduled to receive a 2005 achievement award at the 17th Annual Data Management Association (DAMA) International Symposium, May 22-26, in Orlando, Florida. Wang's award honors a member from academia for outstanding research or theoretical contributions in the area of information and data resource management.

DAMA, an international not-for-profit association of data resource management professionals, serves professionals who develop and execute architectures, policies, practices, and procedures that properly manage the full data lifecycle needs of an enterprise.

LAI Consortium Grants Five-Year Funding

The Lean Aerospace Initiative (LAI) Consortium, comprised of leading government agencies, aerospace businesses, and scholars, has extended funding to the MIT-based LAI team to five years. Earlier funding supported three-year cycles. This support will be channeled toward research and tools developed to accelerate the implementation of lean thinking throughout the aerospace sector.

Details of a new business model designed to facilitate this new phase will be

published on the LAI web site in March - <http://web.mit.edu/lean/>.

The new phase will also be discussed at the 2005 LAI Plenary Conference, March 22-24 in Dana Point, Calif., entitled "Lean Enterprise Transformation: Building the Infrastructure."

In other news, Juliet M. Perdichizzi has been promoted from administrative assistant to LAI services manager.

Boeing Showcases Lean Practices in *Boeing Frontiers*

The cover story of the corporate magazine, *Boeing Frontiers*, is "Lean On Me," a discussion of lean practices as a systematic way to identify and eliminate waste as well as streamline processes. In the November 2004 article, LAI consortium member Boeing reported that lean helps spark new ideas to improve quality and reduce costs and cycle times with an eye on driving innovation and change.

LAI Initiates MIT/MITRE Research Collaboration

More than 75 people attended a Nov. 19, 2004, workshop on research collaboration co-sponsored by MIT and MITRE Corporation. Participants included executives and leading researchers from MITRE as well as 16 LAI-affiliated faculty,

researchers, and students. The workshop, organized by LAI Principal Research Engineer and MIT Senior Lecturer in Engineering Systems Donna H. Rhodes, is the first in a series of events designed to foster research collaboration. The long-term objective is to perform joint research on aspects of engineering complex systems.

Major IMVP Sponsors Renew for Three Years

Three major IMVP sponsors have renewed their sponsorship agreements. Honda, Toyota, and General Motors recently signed three-year partnerships with IMVP. Two major suppliers have signed on as first time sponsors as well: Magna International, a \$16 billion Canadian automotive supplier that builds vehicles, modules and components, and Tenneco Automotive, a \$4 billion U.S. supplier of exhaust and suspension components. Both companies are interested in working with IMVP Lean Locational Logic project team.

IMVP PI Rothenberg Wins Sloan I.S. Fellowship

Sandra Rothenberg, assistant professor at the Rochester Institute of Technology, was one of six young researchers chosen nationwide as a 2005 Sloan Industry Studies Fellow. Rothenberg said her

application was based primarily on studies conducted as an IMVP researcher. "IMVP has certainly been instrumental – if not the primary factor – in supporting my research career," Rothenberg said. "My in-depth work at auto plants was, I think, one of the things that made my application so strong."

Shimokawa Publishes Automotive Business History

IMVP PI Koichi Shimokawa, emeritus professor of Hosei University in Japan, published *Business History on the Global Automotive Industry* in Japanese in 2004. The book has received favorable reviews Japanese newspapers including *Japan Economist*. An English version is expected in 2005.

Global Automotive Program to Focus on Mercedes Benz USA

Mercedes Benz USA's overwhelming response to the inaugural Wharton-IMVP Global Automotive Program (GAP), a one-week executive education program at the University of Pennsylvania, has changed the program's scope. The April 18-22 program will be customized for the company; a public program is scheduled for February 2006.

CFP Leaders Address D.C. Audiences

Communications Futures Program (CFP) Co-Director David Clark keynoted

the National Summit on Broadband Deployment III, Oct. 25, in Washington D.C. Sharon Gillett, who leads CFP's Broadband Working Group, shared a podium with Congressman Ed Markey at a UK Consulate event on mobile broadband, Nov. 18 in Cambridge Mass.

A team including CFP's Gillett, William Lehr, and David Clark are teaching a new course, Communications and Information Policy, in the Engineering Systems Division this spring. The course was first developed with funding from the Cambridge-MIT Institute and originally taught at Cambridge University in fall 2003 and 2004.

A U.S. Department of Commerce grant is supporting work on Gillett and Lehr's development of econometric models comparing sample communities before and after the introduction of broadband access. The project is titled "Measuring the Economic Impact of Broadband Deployment."

Learn more about the Communications Futures Program on page one. ✚

CTPID News Update:
web.mit.edu/ctpid/www/

Author Previews *The Solution Economy* at IMVP Sponsors Meeting



Back Matter

Dan Jones (left) describes *The Solution Economy* to IMVP co-director Michael Cusumano and other participants at the annual sponsors meeting.

At the International Motor Vehicle Sponsors Meeting last fall, Prof. Daniel Jones, co-author of *The Machine That Changed the World*, shared insights from his forthcoming book *The Solution Economy*. The Oct. 11-12, 2004 meeting at the University of Cambridge UK drew more than 35 researchers and sponsors from three continents.

In a lunch talk, Jones noted that as economies become more efficient at producing complex products, consumers have less time to choose and use them. He recommends that companies adjust by understanding real consumer needs and then offering solutions rather than pushing individual products into the market.

Jones noted, in comments on *The Second Century: Reconnecting Customer and Value*

Chain through Build-to-Order, that the new IMVP book exposed the limits of the current system. A review of supply chain dynamics might support solutions such as fast build to order for individual customers balanced by slower delivery to large fleets.

In other presentations, Case-Western Reserve University Professor Sue Helper discussed OEM-supplier dynamics in “Building Tomorrow’s Capabilities Amid Today’s Pressures: the U.S. Case.” Oxford University Professor Mari Sako presented new work on “Contingent Workers in the Auto Industry.” Judge Institute Professor Nick Oliver and University Lecturer Matthias Holweg shared their work at the University of Cambridge on “Better, Sooner, Faster – or Simply Rush-to-Market?: An Investigation into Motor Vehicle Safety Recalls.” †

CENTER FOR TECHNOLOGY, POLICY, AND INDUSTRIAL DEVELOPMENT

Research Programs

- > Communications Futures Program (CFP/ITC)
- > Cooperative Mobility Program (CMP)
- > Ford-MIT Alliance
- > International Motor Vehicle Program (IMVP)
- > Lean Aerospace Initiative (LAI)
- > Labor Aerospace Research Agenda (LARA)
- > Lean Sustainment Initiative (LSI)
- > Material Systems Laboratory (MSL)
- > MIT Information Quality Program (MIT IQ)
- > Technology and Law Program (T&L)

Director

Fred Moavenzadeh
James Mason Crafts Professor
of Engineering Systems

Administrative Officer

Su Chung

Communications Director

Nancy DuVergne Smith

IMPACT

Emerging Work from CTPID

Massachusetts Institute of Technology
Building E40-231
77 Massachusetts Avenue
Cambridge MA 02139-4307
617-253-8973
<http://web.mit.edu/ctpid/www>
ctpidcom@mit.edu

NON-PROFIT ORG.

U.S. POSTAGE

PAID

Cambridge, MA

Permit No. 54016